The Chemical Age

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Notes and Comments

The Annual Chemical Dinner

THE harmony and good fellowship underlying those more or less technical differences that distinguish one chemical organisation from another for the rest of the year were happily demonstrated at the Annual Chemical Dinner held in London on Tuesday evening. Fourteen of the largest societies made themselves jointly responsible, through a small representative committee, for arranging the dinner, which has many unique characteristics. Its president, for example, is not appointed by right of his position in any one of the societies, but is invited on the ground of his distinction in the wider sphere of chemical science and engineering. The president, in turn, has the privilege of inviting the only other speaker as principal guest, and his choice is restricted to one not engaged in chemistry or chemical engineering, and not a politician. Both the president and the principal guest are warned that the dinner is not an occasion for long speeches, and the dinner is, therefore, relieved of much of the boredom that too often characterises such events. It would, however, be impossible to conceive a dinner without speeches, and the organisers of the Annual Chemical Dinner have arrived at an exceedingly happy medium. Taking Tuesday's programme as a whole, with its good menu, its short but excellent speeches, and the dancing which followed, the committee responsible for the arrangements is to be warmly complimented upon its efforts.

British Association of Chemists

BY creating a new class of membership for " eminent persons interested in the objects of the Association " the British Association of Chemists, at its annual meeting at Manchester last Saturday, removed an objection which many of the leaders of chemical science and industry have had in the past to entering into full membership and whose co-operation should be of inestimable value to the Association in the fuller attainment of its objects. Ordinary members contribute compulsorily to the unemployment fund, but it was never intended that the Association should be merely or mainly an agency for unemployment insurance.

Evidence of this is afforded by the fact that already the Association numbers among its past presidents and vice presidents many prominent chemists who have no need to insure against unemployment, but who have identified themselves with it because of a profound regard for its wider objects, and there is reason to believe that the creation of the new class of membership, involving a subscription of two guineas, with no obligation to subscribe to the unemployment fund, will enlist the support of many professors and directors of chemical undertakings in advancing the common cause of chemistry. Everyone on the council is confident that the decision will mean a big movement forward. Four years ago the Association had a meeting where certain alterations of rules were carried in the face of strong opposition from a few members. Practice has proved that the alterations are of great value to the Association, and it is believed that a similar result will be achieved from this year's meeting.

The New Associateship

THE Association has also established an "associateship" open to those chemists not of British nationality who come into Great Britain under Government licence to perform a specific task for a particular period, and has at the same time restricted the ranks of its ordinary members to those of British nationality. As foreign chemists come here to do a particular job of work and return to their own country when they have done it, the question of unemployment does not arise, and the Association has therefore exempted them from the unemployment fund and is asking them to pay a subscription equal to the sum paid by British members for membership and unemployment benefit combined.

The economic interests of the British chemist are therefore not prejudiced in any way, and the facility extended to the foreign chemist of participation in the wider advantages of membership should do much to promote a friendly relationship in this country and to ensure a reciprocal welcome for British chemists whose duties take them into foreign laboratories. This is an important aspect of the Association's decision, and it is to be hoped that it will be appreciated on the Continent as well as at home.

Hydrogenation Research

THE Fuel Research Board, and Dr. King and his co-workers, are to be congratulated upon their research into the nature of the progressive hydrogenation of coal. The manufacture of petrol from coal is about to become an industry of large proportions, and a systematic study of the hydrogenation process can best be undertaken by a nationally-controlled body.

Briefly, this present study consisted in the observation in an apparatus capable of continuous isolation of the products formed of the hydrogenation of a particular coal from the earliest temperatures up to the conversion into liquid, and with and without catalysts and liquid vehicle.

A point of considerable interest is the study of solid catalysis which this work involves. The effect of 0.1 per cent. of a solid amidst so large a volume of coal was more than interesting. How can catalysis occur without contact? How can the necessary intimate contact be secured for so minute a quantity of *solid*? So far the experimenters have contented themselves with recording that as the quantity of catalyst decreased the extent of hydrogenation decreased, though with the smaller quantities of catalyst the balances showed little differences among themselves. We believe that there is no established theory of solid-solid catalysis. How far the work of Langmuir on gaseous catalysis accounts for the reactions in the solid we do not profess to know; we certainly suggest that the Fuel Research Board should devote attention to the very interesting scientific problems raised in solid catalysis. In the present instance the problem is hardly that of catalysis of a solid by a solid, since the coal becomes fluid during the reaction and the catalyst is therefore carried throughout the mass. We should expect there to be an upper limit beyond which further addition of catalyst would cause no further acceleration of the reaction. The amounts added were 0.01 per cent., 0.1 per cent., and 2.5 per cent.; we should expect that addition from 2.5 per cent. to 5 per cent. would cause less acceleration than additions from 0.01 per cent. to 2.5 per cent., whilst further addition up to 10 per cent. might not cause any further acceleration. On the other hand, it is to be remembered that in absence of a vehicle in the early stages of the reaction the coal is solid so that the quantity of the catalyst would affect the extent of contact to a greater extent than in the later stages of the reaction when the coal becomes fluid. There are, indeed, numerous possibilities and we are confident that by investigating them independently and publishing the results, the Fuel Research Board is performing work of a character that will have a lasting influence upon the practice of hydrogenation.

Energy from the Atom

LORD RUTHERFORD has delivered more than one speech recently upon the work that has been done upon transformation of the elements. Transformation may interest us from two or three different directions. Like the alchemists of old, we may be interested in manufacturing gold from the baser metals. As scientists, we are primarily concerned with the insight which this present work gives, and is designed to give, upon atomic structure. The immediate results of the work will probably be most evident in this sphere, for there is no limit save that of the impassable boundaries imposed by immutable physical laws, to which our experiments may not lead us when we have full and detailed knowledge of what we are doing. In many directions that detailed knowledge cannot be secured until we understand the changes that are occurring in the structure of the atom under different conditions, and also the rôle of atomic structure in chemical and physical reactions.

The direction in which most popular interest has been displayed has been the exploration of the possibility of obtaining power from the atom. Formerly we were regaled—or horrified, according to our outlook—with the statement that an express train could be driven from Edinburgh to London upon the power liberated from a few grains of the commoner metals. Now the pendulum has swung to the other extreme, and Lord Rutherford has stated that "we cannot expect to obtain energy in this way. . . . Anyone who looked for a source of power in the transmutation of the atom was talking moonshine." It is true that the energy released by the transformation is 500 times as great as the energy of the bombarding particle; but it is also unfortunately true that some 100,000 particles must be "fired" before a hit is obtained. On the other hand, it is now established that matter and energy are interchangeable, so that if we can "destroy" matter in the sense of rendering it imperceptible to our normal senses as matter, it is converted in radiation or energy. The processes of building up and destroying the atoms, which we are now so painfully and ineffectively imitating in the laboratory, have been going on before our eyes from time immemorial in every star. To our mind, Lord Rutherford's declaration simply means that we have not yet thought of the correct way to do these things. Nor is there any hurry about it. Our coal supplies will last for 500 or 1,000 years. We shall not need inter-atomic or any other form of energy until that period has elapsed.

Wild Tales

THERE is a growing tendency for company promoting concerns—and also for those in government departments—to make press statements on technical matters. These statements will very often receive wide publicity and may attract attention on the Continent as well as in the Colonies. Quite recently, an announcement was made in Australia to the effect that "patents had recently been registered in the United States covering a process for the manufacture of aluminium from alunite; that the holders of the patents claimed the cost of aluminium so manufactured would be so much per pound cheaper; that the alunite deposits in Utah were too far removed from American manufacturers of aluminium to allow of their development, and in these circumstances the holders of the patents were taking particular interest in the Australian deposits with a view to their development." Extensive search through the patent literature for news of a process to produce aluminium from alunite were unsuccessful, and, as far as could be ascertained, no plant was in operation. The process, moreover, was unlikely to become a commercial proposition, for large quantities of bauxite, primarily used as the present cheap source of aluminium metal, are available in many countries of the world. Such announcements, based on insufficient evidence, are harmful to the steady development of industry, and those responsible for making them should be called to account for their actions. A very casual study of the economics of producing aluminium would suffice to show that something was wrong. Moreover, the issue of a patent for any process does not necessarily mean that the process in question is capable of being developed on a commercial scale.

British Association of Chemists

Sixteenth Annual Meeting and Dinner at Manchester

THE sixteenth annual general meeting of the British Association of Chemists was held at the College of Technology, Manchester, on November 25, under the presidency of Professor E. C. C. Baly, who was unanimously re-elected president of the Association for a second year. The meeting was followed by the annual dinner at the Queen's Hotel, and both gatherings were attended by representatives from all the sections of the Association.

Mr. W. H. WOODCOCK, hon. treasurer, presented the financial statement, which showed a surplus on the income and expenditure account of £54, against £43 last year. Subscriptions from members, probationers and students totalled £1,279 and showed an increase of £110 over the previous year. The unemployment benefit fund showed a welcome decrease in the amount of benefit paid to members, the total for the year being £1,059, against £1,540 in 1932. The fund was now in a very sound condition. Good work had also been done through the legal aid fund and the special aid fund, both of which showed a satisfactory balance.

Increased Membership

In the annual report of the council, the adoption of which was moved by Mr. S. Reginald Price, chairman, it was stated that the total membership was now 1,606; 189 new members had been elected during the year in comparison with 169 last year. Several members had taken appointments outside the profession, which accounted for 38 resignations. It was with regret that the decease of nine members was recorded. Under the rules, 53 names had been removed from the register. There was thus a net increase of 89 new members.

The accounts and balance sheet compared favourably with those for previous years. Members were realising the value of the early payment of subscriptions. This provided a solid foundation for definite and organised expansion of activities to the best advantage. The legal aid fund, which recorded the recovery of £3,844 for members, was worthy of special consideration. The legal charges totalled only £63 12s.—and donations a mere £30 16s.—a totally inadequate sum. Twelve months ago the report mentioned that certain cases were listed for appeal. In each instance the Court of Appeal upheld the judgments in favour of members. One member gave a substantial sum in appreciation of the work on his behalf, while several other members had given smaller sums. Others had promised substantial amounts, but the donations had not been received in time for the present accounts. All the members concerned were frank in their high praise of the work on their behalf. The accounts indicated that strict economy had been exercised in all directions whilst efficiency in administration had been maintained.

Unemployment Fund Improvement

Claims on the unemployment benefit fund had been numerous but the position had been greatly assisted by the appointments bureau service which had enabled members to obtain employment without exhausting the full period of benefit. Referring to the appointments bureau, the report stated that the depressed condition of industry which so seriously affected the profession last year continued until the early months of 1933. From the spring there had been a slow but steady increase in the number of appointments available, and it was satisfactory to note the fair-mindedness of employers in offering adequate salaries for responsible work. There was also an increase in the numbers of employers who approached the Association when they had senior and responsible positions to fill which required expert chemists. The total number of appointments notified to members was above the average of the past two years.

The Ministry of Labour when approached for permits for aliens who wished to occupy positions as chemists, continued to put the employer in touch with the Association so that it might introduce to him British chemists with suitable experience, and advise the Ministry on the remuneration adequate to the position. During the past twelve months permits had only been granted to a few aliens who had special qualifications and knowledge of new processes which were to be established in this country for the first time. Thanks were expressed to the Ministry of Labour for the unfailing courtesy and attention which was always extended to the Association.

Last year the Council recorded that several valuable decisions in the High Court in favour of members were the subject of appeal. It was gratifying to be able to state that the Court of Appeal upheld in each case the decisions in favour of the members concerned. In addition a number of substantial claims had been settled by negotiation, as a result of the precedent of three months' notice for the chemist already established by the Association; included in these cases was that of a member in Scotland. At the close of the year several cases were pending. The legal aid department had been consulted on an increasing number of agreements and letters of engagement. The extent and efficiency of this service was always appreciated after the event.

The report of the unemployment special purposes committee recorded a fall of 10 per cent. in the number of claims and a decrease of 33 per cent. in the amount of benefits disbursed, proving the value of the appointments bureau service in assisting claimants to obtain appointments before they had exhausted the full period of benefit. The decrease from £1,540 benefit paid in the previous year to £1,059 paid during the year under review was a welcome indication of the return to greater prosperity in industry.

The Appointments Bureau

Mr. S. REGINALD PRICE, in submitting the report, said it was always dangerous to indulge in prophecy, but he felt they could take the trend of the unemployment benefit fund during the past twelve months as an indication of the improved times. The number of members unemployed was less by 11 to 15 per cent. and he hoped the figures would continue to improve during the coming year. The appointments bureau was closely linked up with the administration of the unemployment benefit fund and was being used by employers and employed, to the advantage of both sides. The Association's relations with Government departments had been, as ever, most cordial, and there was no question that the advice of the Association was being increasingly sought on questions which definitely affected the welfare of their profession. The value of the work of the legal aid department was, in his opinion, extremely high. The standard of the advice given was of the highest and in many cases important decisions had been made by members as the result of that advice, which of course, showed no financial results so far as the balance sheet was concerned, but which might show a very considerable financial result so far as the individual members were concerned.

The Association was definitely on its feet and from now onwards it should go on increasing in status and power. Its progress would depend upon the combined efforts of all the members working towards a common aim—the better economic position of the chemist and the better realisation of the value of the chemist to industry in general. On behalf of the Council he thanked the whole of the head office staff, and particularly Mr. C. B. Woodley, the general secretary, for the excellent work they had done during the past twelve months.

The report and accounts were adopted.

Election of Officers

The following officers were elected for the coming year. President, Professor E. C. C. Baly; vice-presidents: Sir Max Muspratt, Mr. Wm. E. Kay, Mr. C. S. Garland, Mr. J. Bristowe P. Harrison, Professor I. M. Heilbron, and Professor A. G. Green; hon. registrar, Dr. E. H. Rodd; hon. treasurer, Mr. W. H. Woodcock; hon. editor, Mr. H. T. F. Rhodes; auditors, Messrs. Hughes and Allen; members of Council elected by section: London—Miss W. Wright, J. C. Mellersh, A. J. C. Cosbie; Liverpool—H. P. Minton, G. C. Riley; Bir-

mingham—J. R. Johnson; Manchester—T. Horner, J. H. Dent, A. Hill; Notts and Derby—E. A. Chapman; Scottish—R. W. Dunlop.

The Council submitted proposals for the creation of two new classes of membership in the form of the following additions to Rule 3:—" (a) Fellowship.—The Council shall have power at their discretion to elect as Fellows eminent persons interested in the objects of the Association," and " (b) Associates.—The Council shall have power at their discretion to elect as Associates chemists of non-British nationality who otherwise qualify as full members." The proposals also involved amendments in the rules to restrict the ordinary membership, after December 1, to persons of British nationality, and the fixing of the subscriptions for the new classes of members, the subscription for Fellows being two guineas per annum and for Associates £2 12s. 6d. per annum.

The PRESIDENT pointed out that as the rules stood at present, the Council was bound to elect to membership any alien chemist obtaining a temporary appointment under licence in this country who applied and was qualified for membership. When the British Association of Chemists was formed derogatory opinions were expressed by chemists who were not having anything to do with the Association because they said it was being formed for the benefit of chemists unable to get into the Institute of Chemistry. Those who had been associated with the Association knew that there was no truth in that statement, but it must be remembered that there were large numbers of chemists outside the Association who had no idea of what it was doing or how it had benefited their profession. It was of the greatest possible importance to the Association that as many eminent chemists as possible should become identified with it in some way without being ordinary members compelled to contribute to the unemployment fund. Taking his own case as an example, he had only three more years to serve in his professional capacity at Liverpool and it would be ridiculous that he should be compelled to contribute to the unemployment fund.

New Classes of Membership

A lively discussion ensued on the election of Fellows, in the course of which Mr. Price pointed out that this new class of members would have nothing whatever to do with the unemployment fund. The president, in reply to a question, said it was not intended to have a large representation of Fellows on the Council, but he envisaged at least one of their number joining the Council, as he believed it would be of great benefit to the Association to have the advantage of such a member. Several members expressed the view that the name " Fellow " was not altogether suitable and there was equal difficulty in calling the new class " honorary members," since they would be expected to pay subscriptions.

A substantive resolution was ultimately passed approving the principle of electing the new class of members, but leaving the selection of a suitable name to the Council.

The PRESIDENT said there were three courses open to the meeting with regard to alien chemists—(1) to accept them, as at present, as ordinary members, with full liability in regard to unemployment benefit, (2) to admit them as Associates as proposed in the new resolution, and (3) flatly to refuse to elect them at all. There was a great deal to be said for admitting them as Associates. They were admitted to this country by the Government under licence for a particular job and for a particular period and the Association would do well to accept them in a spirit of friendliness. The last thing they wanted to do was anything which would make the situation more difficult for our own men going over and working in German and other laboratories. International circumstances were extremely difficult at the present time and it would be a pity for the Association to adopt any action to give justification for unfavourable treatment being meted out by foreign countries to our own chemists.

Following a full discussion the resolution was approved with the addition of the words " so long as they are resident in Great Britain."

The consequential alteration in the rules was agreed to, the designation of the new class to be filled by eminent persons interested in the objects of the Association being left blank pending the Council's decision. The rates of subscription for the two new classes were also approved.

On the motion of Mr. A. W. H. UPTON, a vote of thanks was accorded to the officers of the Association. The PRESIDENT also thanked the authorities of the College of Technology for providing facilities for the meeting.

Professor E. C. C. Baly presided at the annual dinner of the Association at the Queen's Hotel, and amongst the guests were Principal Mouatt Jones, of the College of Technology, Professor A. Lapworth, Mr. J. C. Mellersh (chairman of the London Section), Mr. T. Horner (Manchester Section), Mr. R. P. Minton (Liverpool), E. A. Chapman (Notts and Derby), and Mr. J. R. Johnson (Birmingham).

Influence of the Association

Mr. S. REGINALD PRICE, in proposing the toast of the Association, spoke of the rapid progress of science from the time—only twenty or thirty years ago—when the chemist, so far as his functions were concerned, was unknown to the general public, until the present time, when the machine created by the chemist in conjunction with the engineer and the physicist, was getting out of hand. That machine was taking charge of the population of the world and people were beginning to ask whether chemistry and the chemist were justified. From the outside point of view that was a difficult question to answer until a definite scientific control of that machine which had been set up was obtained, and in his opinion that control could only be obtained by a definite joining together of scientific influences in this country. The British Association of Chemists had set itself up to be a body concerned definitely with the economic status of the chemist and the profession of chemistry, and apart from looking after the affairs of its own members there was a great deal of work for it to do in the time to come. He believed that the Association was going to be big enough and influential enough to help in tackling those bigger problems which had to be tackled before the affairs of the world could right themselves.

Mr. W. H. WOODCOCK responded, and claimed that the Association was doing work which other organisations could not accomplish. The Institute of Chemistry was an examining and qualifying body, and most of the others were publishing bodies for the instruction and education of chemists. The chemist was a human being, and the B.A.C. was working for the improvement of the chemist. It had had a fairly hard struggle, and after sixteen years it had a membership of 1,600, but he looked forward to a substantial increase in membership in the future.

Mr. T. HORNER, chairman of the Manchester Section, proposed the toast of the guests, coupled with the name of Principal Mouatt Jones.

The World's Debt to Chemistry

Principal JONES, in his reply, said he regarded chemistry as one of the greatest sciences in the world, and the Association was doing a great deal for the welfare of those who were engaged in it. Chemists had made this world a tolerable place in which to live and to imagine a world without chemists they would have to contemplate a world without soap, vitamins, colours and all those things like almanacs, powder puffs, lipsticks and bridge markers that formed the stock-in-trade of the ordinary chemist's shop. They would have to envisage a red-nosed, rickety unwashed population wandering in unbleached, undyed garments over the surface of the globe.

The PRESIDENT proposed the toast of the profession of chemistry, and said he regarded that day as a red letter day in the history of the Association on account of its decision to invite eminent persons interested in the objects of the Association to become more closely identified with its activities.

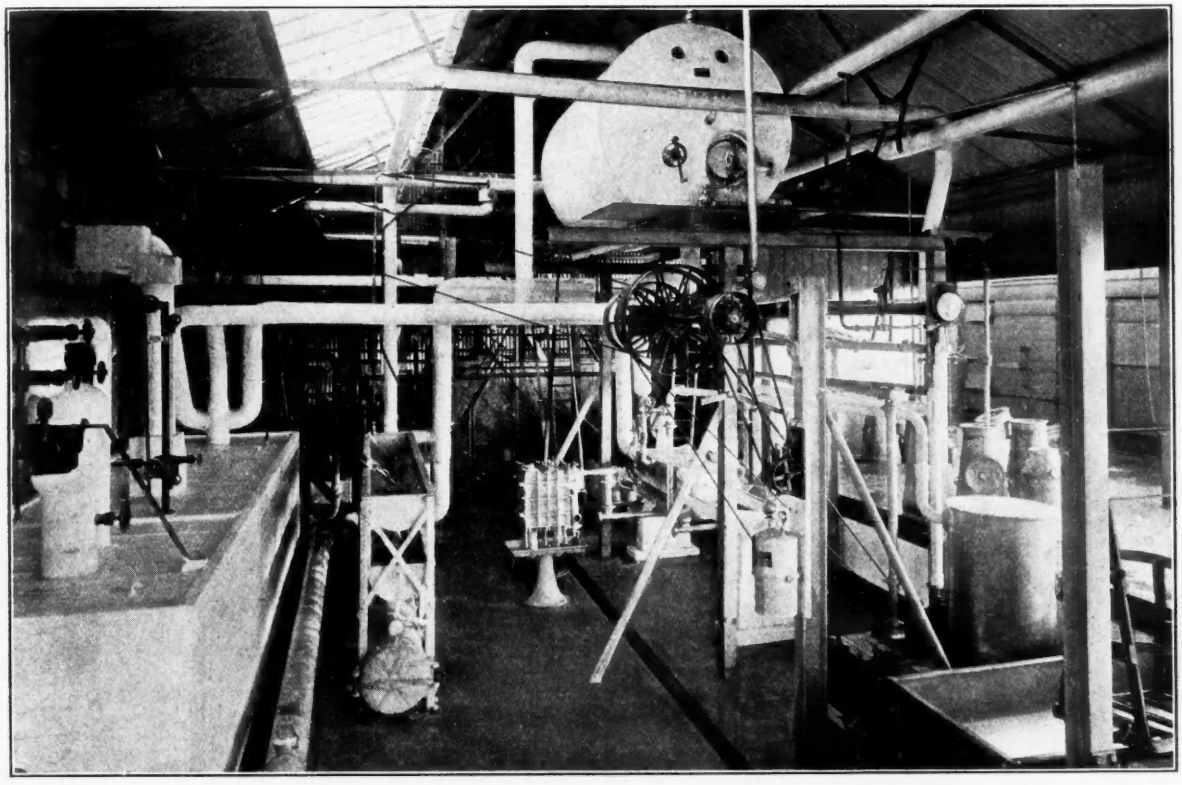
Professor LAPWORTH, who responded, spoke of the importance of the training of the chemist, and said that from his experience as one of those professional men whose duty it was to attempt to teach the embryo chemist, he was convinced that they could not make a chemist in less than seven years. He was not a member of the Association, his reason being that he was a member of a teachers' organisation functioning on similar lines and feared some complication in policy if he was a member of both. He was, however, in sympathy with what the Association was doing, and was one of the first to come in when there was an idea of such a body of chemists being formed .

Safeguarding London's Milk—II

Pasteurising and Bottling at a Modern Dairy Centre

THE bottle-washing plant at the Express Dairy Company's depot at Cricklewood is very comprehensive and is laid out in accordance with the latest principles. It consists of 3 "Tornado" fully automatic washing machines (G. Hopkins and Sons, Clerkenwell, Ltd.), turning out continuously 37,000 clean sterile bottles per hour. Each of the machines occupies approximately 38 ft. in length, and stands about 14 ft. high.

The cases of dirty bottles on arrival at the receiving bank are conveyed by means of automatic gravity conveyors and power conveyors to the loading point of each washing unit.



General view of one of the Country Milk Receiving Depots (Billingshurst) where milk receives a preliminary cooling before being despatched to London.

The bottles are then lifted out of the cases and placed in the automatic loading gear of the washers, whilst the cases continue on their journey via further power conveyors, being washed during transit and finally arrive at the filling and capping machines ready to receive a fresh charge of filled bottles. The bottles after leaving the washing machines are again carried by automatic power conveyors straight to the filling and capping machines where they are automatically filled and capped. These conveyors are all fitted with canopies to prevent dirt falling into the open bottles. The use of these automatic conveyors obviates the bottles being handled between the time they leave the washing machine and the time they leave the filling and capping machines filled and sealed, so that there is no possibility of the sterilised bottles being contaminated by human touch whilst the purity and cleanliness of the milk cannot be effected by the bottles into which it is filled.

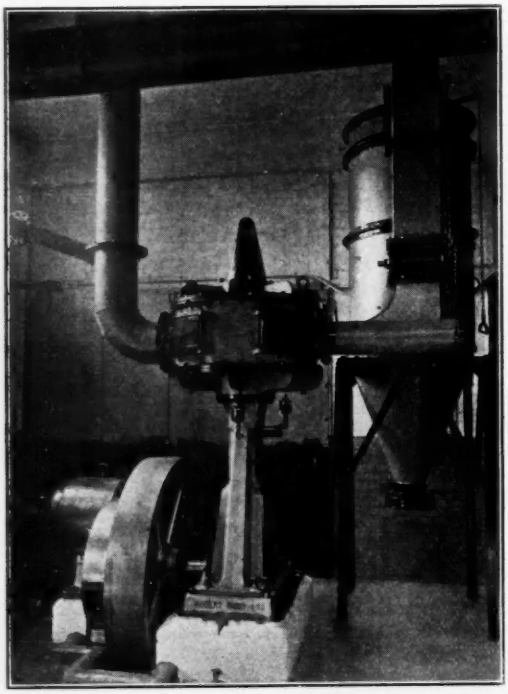
The 3 washing machines each consist of 5 separate washing tanks, and each bottle passes through 5 distinct processes during its progress through the machine. On arrival at the loading end of the machine, the dirty bottles are lifted out of the cases and placed on the automatic loading rack of the machine. They are then automatically pushed forward in rows of 18 at a time into the bottle carriers or "crates" forming part of the machine. Each of these crates holds 18 bottles and the crates are mounted in an endless line between two continuously moving chains each passing through the whole length of the machine and moving at a uniform speed of about 6 ft. per minute.

After the charge of bottles is received by each crate they are automatically locked in position and cannot be released until the crate arrives at the discharge point at the opposite end of the machine. The crates, together with their charge of bottles, rise upwards to the top of the first tank, the bottles meantime being held in the inverted position so that they are completely drained of any liquid which may remain in them when received, and, in addition, receive a pre-rinsing with cold water. The bottles are then completely immersed in the first soaking tank which is filled with fresh water maintained at a temperature of 110° F. They pass to the bottom of this tank, then upwards, and are again inverted, draining the solution back into the tank, also into the next tank which forms the first of the main sterilising tanks. Here they are immersed in a strong caustic solution which is maintained at a temperature of 145° to 150° F. It is here that they receive a very prolonged soaking, then pass out of the tank and are drained preparatory to receiving 30 separate internal and 5 external injections of the hot caustic solution.

The bottles are then once again drained and passed to the next main sterilising tank where the same prolonged soaking and spraying process is repeated. By this time all traces of dirt and grease are completely eradicated and the bottle is

not only clean in appearance, but is at the same time thoroughly sterilised and freed from any bacteriological contamination.

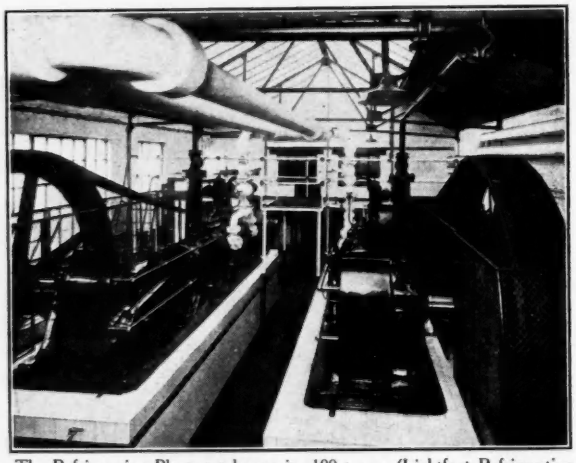
After this very severe treatment it is necessary to remove every trace of the caustic solution and to gradually cool the bottle down to atmospheric temperature ready to receive the milk. The bottle crates therefore proceed downwards into the fourth tank, which is filled with fresh water at a temperature of about 120° F. The bottle cages then ascend on the other side of the tank, the bottles receiving 30 separate injections of cold fresh water. When they reach the top of this tank they pass downwards once more into the final rinsing tank, receiving 20 separate injections of cold fresh water, a further prolonged immersion in fresh water at the same temperature and then 30 separate injections of cold fresh water with 2 further injections of pre-cooled water from the well. Finally they are drained and pass downwards to the discharge end of the machine. On reaching the discharge table each of the bottle crates automatically open and discharge a row of 18 perfectly clean bottles, which are then automatically raised to the upright position and pushed on to the moving platform or apron of the continuously-moving bottle conveyors which carry the bottles right through to the filling hall and automatically feed them into the filling and capping machines.



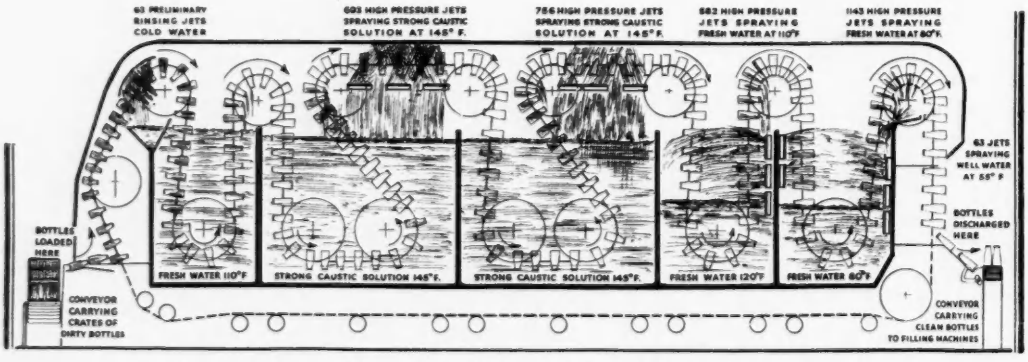
Coal Suction Plant (Robert Boby, Ltd.).

It should be noted that the washing process in the machines consists of repeated soakings and pressure sprayings, and in accordance with modern practice brushes are not used at all for a reason which may not at first be quite obvious. Unfortunately all users of bottes are not too careful in the ultimate use to which the bottle may be put after emptying out milk, and it occasionally happens that bottles arrive at the dairy after having contained paraffin, disinfectants or other objectionable fluids. Such a bottle being accidentally passed through the machine and coming into contact with a brush would immediately contaminate that brush and the brush will pass the contamination to other bottles following in that line. The spraying process being carried out by specially designed nozzles under pressure more effectively removes any deposit from the bottles than brushes could do and no ultimate contamination to other bottles can take place. It may be added that the temperatures in each of the tanks are accurately maintained by thermostatic controls and the only manual operation involved in the thorough cleansing and sterilising of the bottle is to feed bottles into the machine.

No visitor to this plant can fail to be struck by the total absence of leaky cocks and fittings. This is the more striking when it is remembered that the invention of the heat exchanger has made it possible to work at pressures and consequently with efficiencies which have never previously been attained; also that every part of the milk conveying pipework is dis-assembled for cleaning and sterilising every night. The dripless cock consists of four parts, *i.e.*, the body, the plug, retaining ring, nut and key. The novel feature is the retaining ring, which is screwed externally and on its underface carries an inset sealing ring, the centre line of which coincides

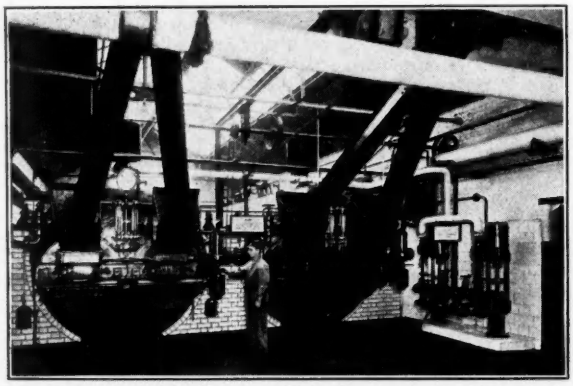


The Refrigeration Plant, total capacity 180 tons. (Lightfoot Refrigeration Co., Ltd., and York Shipley, Ltd.)


63 PRELIMINARY RINSING JETS COLD WATER
603 HIGH PRESSURE JETS SPRAYING STRONG CAUSTIC SOLUTION AT 148° F.
756 HIGH PRESSURE JETS SPRAYING STRONG CAUSTIC SOLUTION AT 146° F.
882 HIGH PRESSURE JETS SPRAYING FRESH WATER AT 110°F
1143 HIGH PRESSURE JETS SPRAYING FRESH WATER AT 80°F.
63 JETS SPRAYING WELL WATER AT 58° F
BOTTLES DISCHARGED HERE
BOTTLES LOADED HERE
FRESH WATER 110°F
STRONG CAUSTIC SOLUTION 148°F.
STRONG CAUSTIC SOLUTION 146°F.
FRESH WATER 120°F
FRESH WATER 80°F
CONVEYOR CARRYING CRATES OF DIRTY BOTTLES
CONVEYOR CARRYING CLEAN BOTTLES TO FILLING MACHINES

Diagrammatic Sectional View of the Bottle Washing Machine (G. Hopkins, Clerkenwell, Ltd.)

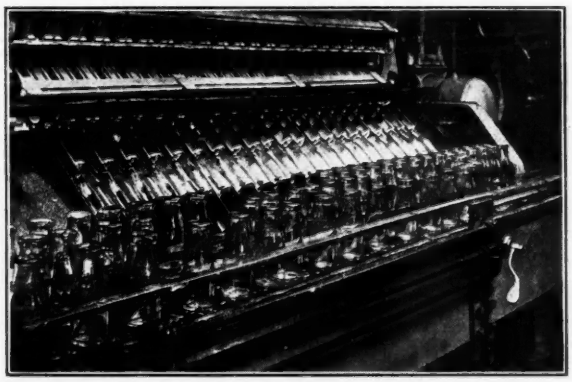
with the joint of the plug and body. When the plug has been set in the body, this retaining ring is screwed into position above it, thereby compressing the sealing ring and making a joint, effectively sealing and preventing liquid from passing between the plug and body. A very slight pressure is required to make this seal, the plug being held in position by



The Boiler House (John Thompson, Wolverhampton, Ltd.), with Mechanical Stoking Equipment (Jas. Hodgkinson, Salford, Ltd.).

the inner flange of the retaining ring, which projects below the outer flange, but is so arranged as to allow a slight compression on the sealing ring, before coming into operation. By the further tightening of this ring, the plug can be locked into any desired position.

For the purpose of pasteurising and bottling an immense head of steam is required. This is provided by two 35 ft. Lancashire boilers (John Thompson, Wolverhampton, Ltd.), with mechanical stoking (Jas. Hodgkinson, Salford, Ltd.), to avoid dust. The necessary draught is obtained by means of a chimney stack 120 ft. in height. The coal is discharged directly from rail siding to automatic stoker by means of a Boby suction plant. Refrigeration is effected to a total capacity of 180 tons, using two 40 ton low speed ammonia compressors (Lightfoot Refrigeration Co., Ltd.), and two 50 ton high speed ammonia compressors (York Shipley, Ltd.). This plant is used entirely for plant operation, cold stores being independently equipped with York Shipley air blast systems. Milk cooling is done by the brine system, the cold brine being carried to the desired points throughout the works by electrically-driven pumps. In this room is also



Discharge end of Bottle Washing Machine showing clean bottles passing to conveyor.

situated the main electrical switchboard controlling light and power throughout the centre.

Works maintenance is effected by carpenters' shop, metals workers' shop, smithy, engineers' shop, tinsmith shop, and mechanical transport repair shops. Canteens are provided for "clean" and "dirty" workers, with adequate cooking facilities.

Analysis of Coal and Coke

An Investigation of the Accuracy of Routine Work

AN investigation into the accuracy of routine analytical determinations on coal and coke has just been published by the Department of Scientific and Industrial Research (Fuel Research Survey Paper 29. An Investigation of the Accuracy of the Routine Analytical Determinations on Coal and Coke by Dr. H. V. A. Briscoe, Dr. J. H. Jones and Dr. C. B. Marson. H.M. Stationery Office, 9d. net.) Most of the results were obtained from investigations carried out jointly at Newcastle-upon-Tyne by the staff of the Coal Survey Laboratory and the staff of the Northern Coke Research Committee.

Accuracy in sampling and in analysing coal and coke is of great importance, although from the nature of the substances dealt with it is very difficult of attainment. The question is by no means of academic interest only. Coal is a highly complex substance which, in chemical and physical characteristics, ranges through almost endless variety. This is now recognised in industry, where modern conditions and processes demand a high efficiency only to be achieved, in the case of coal, by the careful selection of supplies. Further, it is now generally recognised that the only satisfactory basis on which coal can be bought and sold is partly its chemical constitution and, more especially, its heat giving power, as determined in the laboratory. In the case of metallurgical coke, on which the iron and steel industry depends, the requirements of the consumer are equally explicit, although tending more to the physical nature of the material than to its chemical composition.

Bearing in mind the magnitude of the interests involved, it is obvious that every step should be taken to assist the chemist and the fuel technician in their judgment of the degree of accuracy with which they are dealing. The reliance to be placed on the data obtained in the laboratory depends to a larger degree, however, on the accuracy of sampling. When it is realised that the sampling of coal and coke is in itself a very difficult question, it will be seen that the whole problem moves in a vicious circle.

The present report forms an important contribution to this subject, for, in the work which it describes, the accuracy of the analytical results alone, freed from the complication of sampling, has been considered on a mathematical basis, with the result that we are placed in a position to judge the accuracy of routine analytical work, gaining, in addition, a clearer view of other aspects of the problem, *viz.*, sampling and the actual methods used in analysis. In the work on coal, sampling errors were reduced to a minimum.

In order to investigate the influence of any sampling errors which may have occurred, a series of sixty-four repeat determinations were carried out on samples of pure chemical compounds, such as saccharose, phenacetin, and medicinal paraffin, in which no sampling errors could arise. The results obtained were compared with those for the coal. Routine determinations on coke were dealt with in a similar way, one representative sample being divided into 64 laboratory samples on which repeat determinations were carried out. The results were tabulated and examined mathematically as before. The report also discusses in some detail the degree of accuracy to be expected in laboratory work on coal and coke, not only with one worker in one laboratory, but, supported by figures obtained in the course of routine work at the Fuel Research Station and elsewhere, as between different laboratories.

Processes of Cracking Petroleum Oils

Safety Measures at Plants

RECOGNISING the inherent dangers in the processes of cracking petroleum oils, because the substances handled are highly inflammable and extremely high temperatures and pressures are employed to "crack" the complex hydrocarbons composing petroleum, the United States Bureau of Mines has recently published a report outlining the fundamental factors from the standpoint of safety which influence the design of cracking equipment, the operation of cracking plants, and the methods of inspection and maintenance that refiners are using to assure the safety of their plants and workmen.

The growth of the cracking process has been attended by many destructive fires and failures of equipment with resulting loss of life and destruction of property. The safety of any manufacturing process handling highly inflammable liquids and gases under high temperatures and pressures depends not only upon the safe design and operation but also upon the degree of fire protection that has been incorporated in the design and construction of the processing equipment and the extent of the fire-fighting facilities provided about the plant yard. This study of safety at petroleum cracking plants shows that fire protection depends upon the safe design and arrangement of cracking equipment, the organisation and instruction of the operating personnel in fire-fighting activities, and the location and maintenance of adequate fire-fighting and accessory equipment at strategic places about the refinery.

Design of Equipment

In the discussion of design of cracking equipment from the standpoint of safety no attempt is made to tell engineers how to design and build cracking equipment, but the major factors which influence the design of cracking equipment from the safety standpoint are indicated. The proper design of cracking equipment depends mainly upon the amount of consideration given to (1) the influence of high temperature on the strength of the metals, (2) the influence of corrosion and erosion in reducing the wall thickness of pressure equipment, and (3) the influence of shape and stress distribution on the safety of pressure vessels.

The most important factors entering into the problem of safe operation of cracking plants are (1) excluding water from the cracking system, (2) detection and proper handling of toxic and inflammable gases and vapours, (3) eliminating unnecessary sources of ignition, (4) freeing and cracking system of explosive mixtures or toxic vapours before cleaning and repair work is undertaken, and purging the system of air before cracking operations are resumed, and (5) maintaining an adequate and safe system for disposal of refinery wastes.

Severe Corrosion Conditions

The process of cracking is accompanied by severe corrosive and erosive conditions which continually weaken the cracking equipment and add to the dangers of the process. The extent of these weakening effects should be determined at regular intervals by a corps of carefully selected and trained inspectors. Various methods of inspection are described. These include internal and external visual inspection, drill testing, the use of "tell-tale" test holes, calipering, and other measurements made without drill testing, such as hammer testing, tight-wire-measuring apparatus, X-ray, stethoscope, and hydrostatic pressure testing. Of particular interest is a method of determining the wall thickness of reaction chambers by means of a tight-wire measuring apparatus, which is described in detail in the paper.

The data generally presented in "Safety at Petroleum Cracking Plants," (Technical Paper No. 551), show that continuous, safe operation of cracking equipment can be and is being accomplished by the application of proved engineering principles to the design of the processing units, the selection and use of corrosion and heat resisting materials, frequent periodic inspection and testing of pressure equipment, the employment of skilled, intelligent and high-class refinery personnel, and by close co-operation between equipment manufacturers, executives, engineers, and refinery workmen in all matters pertaining to the design, operation and repair of refining equipment. Copies of this publication may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., price 10 cents.

Some New Dyestuffs

Monolite Bordeaux Blys

MONOLITE BORDEAUX BLYS (paste and powder), a new I.C.I. product, represents a yellow shade brand of Monolite Bordeaux BLS and possesses fastness properties similar to those of this well-established product. It finds many useful outlets where a light bordeaux shade of good fastness to light, oil and water is demanded, *e.g.*, in the manufacture of printing inks, oil and water paints and colours for the linoleum, wallpaper and paper surfacing trades. It is insoluble in water and requires no precipitation agent for the development of the shade. It is simply mixed or ground with the required substratum into the process medium and is then ready for use.

Greys with High Fastness to Light

DIPHENYL FAST GREYS GL AND RL, introduced by the Geigy Colour Co., Ltd., are two further new direct dyeing colours for cotton and artificial silk possessing the same high fastness properties as Diphenyl Fast Blue Green BL. The GL brand yields a clear bluish-grey, whilst the RL brand gives a redder shade, and by a combination of the two products, pleasing grey shades can be obtained with exceptional fastness to light, alkali, acid, rubbing, calendering, good fastness to sea water, perspiration, stoving, sulphite and vulcanising, together with relatively good fastness to water and washing. The solubility and level dyeing properties are in both cases of a very high order, and the dyeings have an excellent shade in artificial light. Diphenyl Fast Greys RL and GL find application wherever high fastness to light, and good fastness to water, alkali, acid and perspiration are required on cotton and artificial silk (with the exception of acetate silk) and also on natural silk. As self colours they are further quite suitable for mixed fabrics of cotton and artificial silk. In consequence of their excellent dischargeability they also come into question for the various classes of discharge work.

Naphthalene Leather Brown RBS

NAPHTHALENE LEATHER BROWN RBS, is an addition to the range of acid dyestuffs made by Imperial Chemical Industries, Ltd., for application to leather. It is a homogeneous acid dyestuff, to which there is no competitive equivalent product. When dyed in the manner customary for acid dyestuffs, *i.e.*, with an addition of formic or sulphuric acid to exhaust the dyebath, it gives maroon-brown shades of exceptional strength on all classes of leather. The high tinctorial power of the product will be appreciated from the fact that 3 to 4 per cent. on skiver or 0.5 to 1 per cent. on chrome calf is sufficient to yield full shades. Being of good solubility, Naphthalene Leather Brown RBS will find extensive use in

the brush staining of hides and sheepskins for upholstery work. Although possessed of only fair fastness to washing it is of interest to the gloving trade on account of its very good light fastness; which latter property also renders it of great value to manufacturers of leather for use in the bookbinding trade.

Solochrome Cyanine RS

SOLOCHROME CYANIDE RS, introduced by Imperial Chemical Industries, Ltd., is of interest as a shading colour on account of the brilliancy of its shade and its excellent fastness to milling, potting, etc. It is also of interest for brightening navy blues fast to milling and for replacing acid violets as the blue component of mode shades where brightness of shade and excellent fastness to milling are desired. By virtue of its very good fastness to "acid planking," this dyestuff is eminently adaptable for dyeing loose fur for use in the manufacture of *mélangé* hats, etc. It may be applied to natural silk by either the afterchrome or chromium chloride mordant processes and gives bright blue shades of excellent fastness to water and washing. It is adaptable for machine dyeing by reason of its excellent solubility and the fact that it is unaffected by the presence of metals in the dyebath. Products of the type of Solochrome Cyanine RS find extensive use in calico printing when chrome colours of extreme brightness, but of only moderate light fastness, are required.

Annual Chemical Dinner

Sir Ernest Benn and the Ideal Public Man

SIR ERNEST BENN, who was accompanied by Lady Benn, was the principal guest at the Annual Chemical Dinner, held at the Wharncliffe Rooms, Hotel Great Central, on Tuesday evening. The dinner, held under the joint auspices of fourteen of the principal chemical organisations, was presided over by Lord Leverhulme, accompanied by Lady Leverhulme, and was attended by a company of about 400. The dinner is unique in the chemical calendar in that the speeches are confined to two in number and only a few minutes in length, the rest of the evening being devoted to dancing. Amongst those present on Tuesday were Lord Melchett, Sir Christopher and Lady Clayton, Sir Robert and Lady Robertson, Mr. and Mrs. E. A. Alliott, Mr. W. A. S. Calder, Dr. J. T. Dunn, (president of the Society of Chemical Industry) and Mrs. Dunn, Mr. and Mrs. F. A. Greene, Dr. and Mrs. L. A. Jordan, Dr. R. Lessing. Dr. and Mrs. H. Levenstein, Mr. and Mrs. W. Lloyd Willey, Professor and Mrs. G. T. Morgan, Mr. and Mrs. L. P. O'Brien, Dr. and Mrs. W. R. Ormandy, Dr. and Mrs. R. H. Pickard, Mr. and Mrs. R. B. Pilcher, Mr. and Mrs. H. J. Pooley, Mr. J. Davidson Pratt, Mr. J. Arthur Reavell, Mr. and Mrs. J. F. Ronca, Mr. C. B. Woodley, Miss Wright, and Mr. J. Arthur Williams.

Genuine Public Work

Sir ERNEST BENN, in proposing the toast of "Chemistry," said he was delighted to have the opportunity of speaking to such a distinguished assembly of scientists—a large percentage of whom were doctors of one sort or another—if only to propose a toast to which Lord Leverhulme would respond. He had been warned in a two-page letter from one of their officials that the dinner was not the occasion for speeches, and, so far as he could follow the argument in the letter, he had been invited to propose the toast because he had no qualification for the job. He regarded Lord Leverhulme as something of the ideal in the way of a public man. He said that with the greater sincerity because he was not one who was afflicted with an over-dose of reverence for the type they generally called public men. Lord Leverhulme first of all carried a vast load of business responsibility, and that was accompanied by a greater proportion of genuine public work than many other men performed. In his public work there was no suggestion of any axe to grind, no party to console and no good cause to force down people's throats against their will. He was not playing the great game of government of the mob at the expense of, and to the detriment of the mob.

It seemed to him that as president of the London Chamber of Commerce, the Associated Chambers of Commerce, and he did not know how many chemical societies, Lord Leverhulme was working with a sort of motto which might be adopted as a parody of an old saying; he was concerned to find out and to help other people to find out "How to be happy though governed." Lord Leverhulme had followed a distinguished father, and some of them might have noticed a phrase which had struck him more than any other in that delightful book on his father which Lord Leverhulme wrote. He referred to the occasion when Sir William Lever, as he then was, once and only once found himself a Member of Parliament, having secured a notable victory for the cause he loved; Lord Leverhulme's comment on that was that he had contested a comparatively hopeless seat once too often.

It was a particularly happy inspiration to have a dinner held under the auspices of a dozen or more chemical societies. One noticed in the list the Food Group of the Society of Chemical Industry, and he understood there had recently been formed a new Wine and Food Society. The more learned members of that assembly probably did not recognise what it all meant but he visualised the possibility of being able to sit down to a menu such as they had had that night certain in the knowledge that from the scientific and chemical point of view they would derive good health, comfort and perfect satisfaction.

Chemistry, concluded Sir Ernest, touched every detail and every branch of life more than any of the other sciences, and with that feeling, and with the knowledge which the doctors and others present that night had about it, he had great pleasure in asking them to drink to the toast of "Chemistry," coupled with the name of Lord Leverhulme.

Lord Leverhulme's Response

Lord LEVERHULME, in responding to the toast, expressed his warm appreciation of having been asked to preside at the annual chemical dinner. He regarded it as a compliment not only to himself but also to the Institution of Chemical Engineers, of which he had the honour of being president. He was two-thirds of the way through his second year of office as president of the Institution, and had come to feel very much at home at the council meetings and other gatherings of that body. He confessed, however, to some embarrassment that night presiding over the whole of chemistry. He felt rather like the central atom in a highly complex molecule of one of the higher alcohols. It was the privilege of the president to choose a speaker, on the understanding that he was not to be a person engaged in chemistry or chemical engineering and he was not to be a politician. He felt that by inviting Sir Ernest Benn he had managed to find one who was as far removed from the politician as the ash from the elder. While Sir Ernest was not a chemist, he was certainly scientific in mind, and was a believer in the principle that all progress depends on the operation of certain fundamental laws. Sir Ernest held that in the free and natural operation of those laws lay the greater hope of national and world recovery. In the past few years his books—three of which he had read, namely, "Account Rendered," "Honest Doubt," and "This Soft Age"—had played an important part in compelling them to face economic realities. He was now enlivening and stimulating them as editor of "The Independent," and he trusted that under Sir Ernest's guidance that new weekly would flourish as it deserved. Sir Ernest had paid a delightful tribute to chemistry. Those who were chemists and those related to chemistry believed that great as was the part played by chemistry to-day, it was going to be even greater in the future.

Imported Maize Starch

Application under Merchandise Marks Act

THE standing committee appointed by the Board of Trade under the Merchandise Marks Act, 1926, heard an application at the offices of the Board of Trade, London, on November 20, for a Marking Order in respect of imported maize starch, including maize starch cornflour. The committee was presided over by Sir Hubert Llewellyn Smith, the other members being Mr. G. Barnes and Mr.. F. R. Davenport. The applicants were the Maize Starch Manufacturers' Association, composed of three firms in Paisley, who, it was said, manufacture the whole of the maize starch made in this country.

Originally there had been opposition to the proposal for a Marking Order on the part of the Grocers' Federation and one or two firms, and at the last moment Boot's Cash Chemists entered an appearance against the proposed Order in respect of maize starch crystals. Before the proceedings before the committee began, however, the parties—with the exception of Boot's Cash Chemists—had come to an agreement, which was placed before the committee.

Mr. G. O. SLADE, who appeared for the applicants, said the firms comprising the Association manufactured their maize starch from Empire maize as far as possible, but there was a large import of maize starch, which amounted to 1,851,444 cwt. in 1931. The production in the United Kingdom for that year was 444,200 cwt. The consumers included the textile finishing trade, paper making, the laundry and grocery trade, and as it was only by expert examination that the difference between British-made and imported maize starch could be detected, it was believed that a large number of consumers in Great Britain are entirely unable to discriminate although they would prefer the British-made article. It was pointed out that maize starch is usually imported in jute bags of 140 lb., in barrels of 200 or 224 lb. or in cases containing 12 paper packets of 4 to 5 lb. each. Imported starch was also sometimes made up into smaller packets for sale in the United Kingdom. The applicants asked that the indication of origin should be marked indelibly and in a conspicuous manner on importation, and on sale or exposure for sale wholesale and retail. It was not asked that there should be an indication of origin when exposed for sale in bulk, *i.e.*, loose and it was also agreed that samples up to the maximum weight allowed by parcel post could come in without marking.

Relieving the Retailer

Mr. W. HERMAN KENT, secretary of the Grocers' Federation, said his organisation had desired to relieve the retailer from having to make the necessary marking, and for that reason strongly supported an importation Order.

Mr. SLADE, for the applicants, said he asked for an importation Order because it was felt that was the most economical and convenient method in which the marking could be done.

Mr. H. PLACKETT (buyer to Boot's) said his firm's interest in this matter was solely as regards crystal maize starch. They were the largest buyers of maize starch in this country and all their supplies were imported, the reason being that as they had not been approached by the British manufacturers they assumed they could not get sufficient supplies in this country.

The CHAIRMAN: Then how does this proposed marking Order affect you?

Mr. PLACKETT replied that the bulk supplies were made up into small packets and sold over the counters of Boot's branches and these small quantities were not marked with the country of origin.

The CHAIRMAN drew witness's attention to Section 1 of the Merchandise Marks Act, of 1926, which states that imported goods bearing the name or trade mark of a British manufacturer or trader must not be sold unless accompanied by an indication of origin.

Mr. PLACKETT, having read the Section, said it seemed that Boot's had been breaking the law, but there was not the slightest doubt it had been done unwittingly, otherwise they would not have appeared at this inquiry.

The CHAIRMAN said that perhaps Mr. Plackett would now appreciate that anything which might have to be done under the proposed Order would not place on Boot's the responsibility of doing anything more than they were now compelled to do under Section 1 of the Act in regard to this particular product and that therefore the opposition would be withdrawn.

Mr. PLACKETT replied that that would be so.

There was further discussion between the Committee and the parties in regard to details of the proposed method of marking as agreed between the applicants and the opponents, and the inquiry closed.

Chemical Notes from Overseas

Soda Ash Production in India

A CALCUTTA firm is investigating the possibility of producing soda ash by the Solval process. Quotations have been solicited for plant and equipment for the production of 30 to 60 tons of ash daily.

Agricultural Insecticides in Norway

THE market for agricultural insecticides in Norway has shown a big improvement during the past year as a result of the splendid results obtained by certain fruit growers who have doubled the production of their orchards by proper spraying.

Canadian Imports of Flotation Reagents

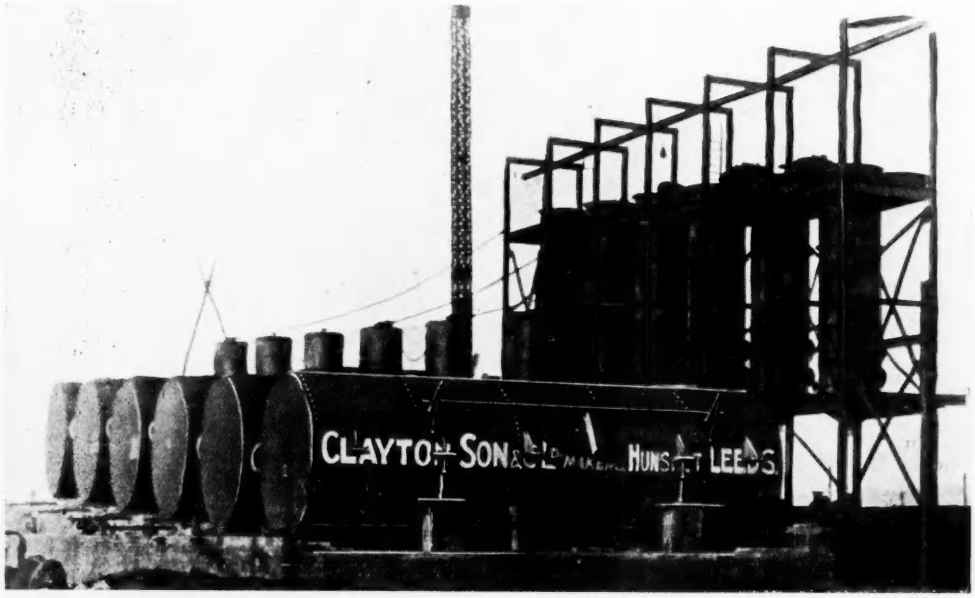
IMPORTS into Canada of " xanthates, cresylic acid and compounds of cresylic acid, used in the process of concentrating ores, metals or minerals " totalled 979,920 lb. ($171,968) during the twelve months ending March 31, 1933, compared with 1,328,020 lb. ($221,276) in the corresponding period of 1931-32. Of the 1933 fiscal-year total, the United States supplied 947,683 lb. ($171,089), as against 1,289,942 lb. ($217,903) in the previous year.

Italian Synthetic Camphor Industry

THERE is only one producer of synthetic camphor in Italy, namely, the S.A. Marengo of Genoa, with plants at Spinetta Marengo near Alessandria. The Marengo is an important producer of copper sulphate; the controlling interest is held by the Montecatini, the largest Italian manufacturer of copper sulphate. The synthetic camphor plant, however, is operated independently. Official trade figures show 358 tons of camphor exported in 1931, 384 tons in 1932, and 99 tons during the first 5 months of 1933.

Czechoslovakia Seeks New Pharmaceuticals

THE market for prepared medicines and medicinal chemicals in Czechoslovakia is not large, primarily because of the low purchasing power of the population, the operation of the compulsory sick insurance system (which in practice issues only prescriptions), and the governmental restrictions on public advertising of proprietary medicines. It is estimated that the consumption of proprietary medicines in 1932 amounted to approximately $4,411,800, of which 50 per cent. was supplied by domestic industry and the remaining 50 per cent. by imported products. The greater part of the imported medicinal chemicals used in the Czechoslovak pharmaceutical industry has heretofore come from Germany. The domestic firms are reported to be looking for new sources for several of the chemicals they require, and the United States is considered first as a possible supplier. The following chemicals are desired by local manufacturers and wholesalers, and none of these products are obtainable locally: Bromine, iodine, barbituric acid, diethylbarbituric acid, phenol-ethyl-barbituric acid, tartaric acid, tannic acid, bromoform, atropin and salts, quinine and salts, iodoform, menthol synthetic, camphor synthetic, phenacetin, phenolphthaline and theobromine.



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Notes and Reports from the Societies

Institute of Chemistry

Glasgow Section : Refresher Lecture

A JOINT meeting of the Glasgow Sections of the Society of Chemical Industry and the Institute of Chemistry was held in the Royal Technical College, Glasgow, on November 24, when Dr. S. Horwood Tucker, of Glasgow University, delivered the first of a series of "Refresher Lectures in Chemistry," which have been arranged by the Glasgow Section of the Institute of Chemistry.

Dr. Tucker's subject was the recent advances in organic chemistry. He said that, in his opinion, the most significant advance in organic chemistry within recent years had been the application to organic substances of the electronic theory of valency. He then discussed the views of Kossel and Lewis and explained the semi-polar double bond. From this point Dr. Tucker proceeded to consider some of the outstanding theories which have been proposed and proved within the last few years. One of the most interesting sections was the discussion of the chemistry of the vitamins. Vitamin A was shown to be related to the carrot, since carotin, the colouring matter of this vegetable, undergoes transformation in the liver into vitamin A. Our knowledge of vitamin B is not so definite, but Windaus has claimed to have isolated this substance and reports that it contains sulphur. Vitamin C, the anti-scorbutic vitamin, has proved a most interesting substance. It is known to be present in fresh vegetables and in such fruit as oranges and lemons. Its isolation from these sources has so far been unsuccessful, but recently it has been obtained comparatively easily and in good quantity from Hungarian red pepper. Vitamin D is found in cod liver oil and its precursor has been proved to be ergosterol.

The hormones were also discussed by Dr. Tucker, who said that some of these substances had been isolated and synthesised. One of the hormones which at present was attracting a great deal of attention was oestrin. At the beginning of this year the synthesis of a substance resembling oestrin in its pathogenic properties had been reported. Substances having oestrogenic properties had been extracted from peat, petroleum and lignite, but these extracts were unsuitable for clinical use as they were known to produce cancer. Something of the chemical nature of substances producing cancer was now being discovered as it had been shown that a synthetic product, 1 : 2-benzpyrene had carcinogenic properties.

Leather Trades' Chemists

Conference of Tanners and Chemists at Kettering

A JOINT conference between members of the British Section of the International Society of Leather Trades' Chemists and members and associates of the Federation of Curriers, Light Leather Tanners and Dressers, Inc., was held at Kettering, November 22-23. The chair was taken by Mr. Chas. A. Pearce, president of the Federation.

Chemical analysis versus physical testing for judging leather quality was the subject of a paper by Dr. C. H. Spiers, of Leathersellers College, London. He said that in the early days of leather examination, leather was tested for directly useful qualities such as strength, wear resistance, etc., but in more recent times such methods seem to have been pushed in the background by the newer technique of chemical analysis. This latter could throw little light upon behaviour in use, since leather is valuable chiefly because of its physical characteristics. In the effort to utilise chemical analysis in judging leather, much effort had been devoted to attempts to trace relationships between composition and useful properties, but with scant success.

The physical and chemical properties of lime most suited for tannery purposes were discussed by Dr. F. P. Stowell (I.C.I. Limes, Ltd.). Chemically, the calcium oxide content should be as high as possible, and silica, iron oxide and magnesium oxide low. Physically, the lime should be as lightly burnt as possible, as it is then more reactive, and the milk of lime suspension slower settling. Broad indications of the quality of the lime may be gained by examination of the colour, etc., rate of slaking and rate of settling of the milk of lime suspension. The slaking was most important. If a high calcium lime, it should be slaked in excess of water, hoeing well. The material should be stored in a dry place, free from draughts, and never near a furnace on account of absorption of gases. Hydrated lime, however, could be stored indefinitely without undue deterioration. For use, it was simply mixed with water in the pit, stirred well, or painted on the hides. There was no possibility of burning through unslaked particles. Nevertheless, there was still controversy amongst tanners as to the benefits of using the hydrate, but more tanners were using it with satisfaction. Research was proceeding in the I.C.I. on the best limes to be used for tanning, and co-operation of users was most helpful.

The mechanism of emulsion formation was explained in the light of modern theories of orientation at liquid/liquid interfaces by Dr. R. H. Marriott (British Leather Manufacturers Research Association). He pointed out that emulsions of acid oils (oils containing some free fatty acids) in water and soap were more stable than those of similar but neutral oils; again, the addition of a fatty acid or some similar substance to a mineral oil renders its emulsion in soap and water stable. Excess alkali in the fat-liquoring of chrome leather should be avoided as "breaking" of the emulsion is retarded until the central parts of the skin are reached. Premature breaking of the fat-liquor itself is often prevented by the use of a sulphonated oil as emulsifier. Such emulsions, however, are not very stable and frequently necessitate the use of egg yolk or gums as stabilisers. Sulphonated fatty alcohols are amongst the more recent emulsifiers, being unaffected by acids and very little affected by lime and magnesium salts, but react with chrome and aluminium.

Papers were read also by Mr. Roberts (for Dr. Feltzmann, of I. G. Dyestuffs, Ltd.) on "Production of White Leathers," and Mr. S. A. Sim (Nobel Section, I.C.I., Ltd.) on "Nitrocellulose Finishing."

Society of Chemical Industry

Food Group Dinner

IN connection with the bread and milk symposium arranged by the Food Group on November 23 and 24, a dinner was held at the Trocadero Restaurant, London, on November 24. Dr. L. H. Lampitt, chairman of the Food Group, presided. The total company, including ladies, numbered about 200.

The toast of "His Majesty's Government" was proposed by the CHAIRMAN, who said that the Food Group was an earnest body, among its objects being the bringing together of those who were interested in the scientific aspect of food, and especially to bring about contacts between scientists in the food industry and those working in the fields which abut on what the Food Group considered its own realm. The Food Group had a new point of view, *viz.*, the point of view of the chemist in the industry who had to a large extent been disregarded in the past. Hitherto the interpreters of the food industry had been the public analysts or medical officers, but in the Food Group there was now the possibility of the presentation of the scientific side through the medium of people who were actually working in the industry. The great idea was to study things from the chemical and scientific point of view.

Mr. GEOFFREY SHAKESPEARE (Parliamentary Secretary to the Ministry of Health), in his reply to the toast, welcomed the work being done by the Food Group of the Society.

Dr. J. T. DUNN, president of the Society of Chemical Industry, proposed "Our Guests" and naming most of them extended a warm welcome, at the same time expressing the wish that they would long prosper in the different walks of life in which they are so distinguished. The toast was coupled with the names of Professor W. W. Jameson and Professor Dr. A. J. Kluyver.

Professor W. W. JAMESON, M.D. (Dean of the School of Hygiene and Tropical Medicine), in the course of his res-

ponse, said that he had had a rather intimate acquaintance with those associated in daily work with chemists who had learned some of their work in industrial life, and he was bound to say that with regard to some of the ordinary affairs of life he got more horse-sense from the chemist who had had part of his training in industry than from anyone else. The formation of the Food Group inside the Society would be one of the very best things the Society had ever done because it would attract to the Society the interest of all sorts of people which it might otherwise have been difficult to do.

Professor Dr. A. J. KLUYVER (Delft), who made the second response to the toast, added an expression of his own appreciation of the manner in which the food symposium had been organised.

The CHAIRMAN expressed special thanks to the symposium committee, of which Dr. D. W. Kent Jones was chairman and Dr. H. E. Cox was honorary secretary, for the manner in which the symposium had been organised.

Birmingham Section : Phenol Formaldehyde Resins

THE output of phenol formaldehyde resin oils has far surpassed the output estimated four or five years ago, said Mr. George Dring, B.Sc., F.I.C., in his paper on " Some Chemical Aspects of Phenol-Formaldehyde Resins," read before a joint meeting of the Birmingham and Midland Section of the Society of Chemical Industry and the Plastics Groups on November 21, when Mr. H. W. Rowell (chairman of the Section) presided.

Efforts have been made to utilise the high phenolic content of low temperature tars for use in the manufacture of phenol formaldehyde resins, but so far with indifferent commercial success. Precise knowledge is needed of raw materials, this being as important as the synthesis of a pure crystalline product which can be analysed and given an accurate and scientific formula. It is for this reason that one appreciates the work of Professor Morgan and his associates in trying to produce order out of chaos, and the work at Teddington to elucidate the nature of the complex bodies present in low temperature tars is a step in the right direction. With increasing uses for phenolic resinoids, phenols and substituted phenols will become more and more important as key materials. The phenols themselves are not free from considerable suspicion in regard to their chemical identity. The hydrogen, joined to oxygen, is both alcoholic and acidic, and it is suspected that it may migrate to the para position, and in some cases give a quininoid structure to the phenol. Some of the substituted phenols show a very awkward tendency to revert to others. Solubility in caustic soda is no criterion of true phenolic nature, as in some cases the insolubility of the sodium salt of the cresol in caustic soda complicates the problem, and in other cases, depending on the stability of the ether an aryl or alkyl group attached to the oxygen, may migrate into the benzyl nucleus under the action of caustic soda.

The Work of Dr. Baekeland

The fundamental work of Baekeland was carried out as the reacting material, and this has maintained its position at the head of the field of phenolic resins and synthetic resins, and if supplies of natural phenol becomes inadequate or fails, synthetic phenol can be produced in plenty, although to-day at much higher prices than the industry can afford. He believed it would be a paying enterprise to manufacture synthetic phenols, but so far there is no apparent evidence of a move in this direction in this country. As the price of phenol has heavily advanced, intensive research has been undertaken to produce from the other ingredients of coal tar products equally as good as those made from phenol for special purposes. There is a prejudice against moulding materials from any other raw material than pure phenols. The cheap cresol moulding materials which were produced were of a one-stage type, which were very slow moulding, ejected from the mould is a flabby condition and often had a vile odour. These old type of cresoled moulding powders bear no relationship to materials of present-day manufacture, because the resin reaction can be controlled. There will be still further advances in the technique of resin manufacture. A notable advance has been the production of phenol formaldehyde resins which show a marked resistance to the action of caustic soda.

Regarding the use of the phenol formaldehyde type of resins for the manufacture of air-drying varnishes, it is now possible to produce all phenolic resins which are 100 per cent. soluble in drying oils without any other additions. There is no doubt that these oil soluble resins will find a permanent and important place in the manufacture of paints and varnishes.

One-Step and Two-Step Resins

The two main divisions of phenol formaldehyde resins are (a) one-step resins, (b) two-step resins. The one-step resins are made using approximately one molecule of formaldehyde to one molecule of phenol, in the presence of basic catalysts, the most commonly used being ammonia. Small amounts of alkaline catalysts used in this way not only carry the reaction to the stage of formation of intermediate products of low molecular weight, but also catalyse the further condensation to the heat hardenable resinoid " a " and by the continued application of heat the resinoid " a " will go through the " b " to the " c " stage and the final hardened resinoid. With small amounts of alkaline catalysts therefore we have practically a continuous reaction where it is very difficult indeed to isolate any of the intermediate steps. With small quantities of acid catalysts and using less than the theoretical amount of formaldehyde, the phenol-formaldehyde reaction is quite differently controlled and the reaction proceeds only as far as the permanently fusible novolak resin, which can be only transformed into the resinoid " a " or heat-hardenable type by the further addition of formaldehyde. Generally, hexamethylene tetramine is used in order to convert the permanently fusible novolak into the heat hardenable resinoid " a." A second type of two-step reaction is obtained when excess catalysts are used; for instance, molecular proportions of alkalies followed by neutralisation.

Mr. Dring gave a presentation of the scheme proposed by Baekeland and Bender based on considerable experimental work on related compounds. One molecule of formaldehyde reacts with one molecule of phenol to give one molecule of phenoxy-methyl-alcohol, but this immediately rearranges in the case of phenol itself to hydroxy-benzyl-alcohol. It is suggested that this intermediate step is very important in connection with the higher homologues of phenol. The final step in the condensation where one formaldehyde group unites with one molecule of phenoxy-methyl-phenol cannot be proved, but various indications such as the formation of water and phenolic properties of the product after condensation suggest that the tendency to polymerisation is best explained by the formula where the double linkage between the carbon atoms gives a fruitful field for the theories of polymerisation by primary valence linkage.

Yorkshire Section : Jubilee Memorial Lecture

Biochemistry, and the manufacture of fine chemicals, will be the subject of the Jubilee Memorial lecture, to be given by Dr. F. H. Carr, F.I.C., in the Medical School of the University of Leeds, on December 4, at 7.30 p.m. The author will discuss the scientific principles underlying the manufacture and medical uses of biochemical substances. He will be dealing with substances such as insulin, which directly influence physiological function, and will make special reference to the hormones and the vitamins. Visitors are cordially invited to be present. The Medical School is in Thoresby Place, adjoining the Leeds General Infirmary.

Chemical Engineering Group

Joint Meeting with Bristol Section of S.C.I.

THE Chemical Engineering Group will hold their next meeting jointly with the Bristol Section of the Society of Chemical Industry, on December 7. The programme includes a visit to the Bristol Pottery, Fishponds, Bristol, by the kind permission of Pountney and Co., Ltd., and an informal dinner, at Hort's Restaurant, Broad Street, Bristol. A meeting will be held in the Chemical Department of the University of Bristol at 6.45 p.m. when a paper on " British Chemical

Stoneware" will be presented by Mr. G. N. Hodson. This paper will deal with the development of British chemical stoneware; manufacture; chemical and physical properties; use in industry and methods of obtaining best results with stoneware apparatus.

Society of Public Analysts

Five Papers at Next Week's Meeting

A MEETING of the Society of Public Analysts will be held at the Chemical Society's Rooms, Burlington House, London, on December 6, when the following papers will be read:—"A Specific Gravity Apparatus," (C. H. Cribb, B.Sc., F.I.C.); "The Excretion of Aloes," (G. F. Hall, B.Sc., A.I.C., and W. M. Keightley, A.I.C.); "The Chemical Examination of Furs in Relation to Dermatitis.—Part IV. The Chemical Reactions of Dyeing with *p*-Phenylenediamine," (H. E. Cox, M.Sc., Ph.D., F.I.C.); "The Use of the Air-Damped Balance for the Determination of Total Solids in Milk," (Captain John Golding, F.I.C.); and "A Rapid Method of Determining Minute Quantities of Nitrites," (G. G. Rao and K. M. Pandalai).

Institution of Chemical Engineers

Corrosion and Protection of Magnesium

A PAPER on "The corrosion and Protection of Magnesium and its Light Alloys will be read before the Institution of Chemical Engineers by Dr. Guy D. Bengough, and Mr. L. Whitby, M.Sc., A.I.C., at a meeting to be held at the Chemical Society's Rooms, Burlington House, London, on December 8. The chair will be taken by Mr. W. A. S. Calder (immediate past-president). This paper embodies work carried out for the Corrosion of Metals Research Committee of the Department of Scientific and Industrial Research.

Manufacturing Chemists' Libel Action

An Article in "John Bull"

IN the King's Bench Division, on Monday, Mr. Justice Horridge and a special jury commenced the hearing of an action by Wynter Bros. and Co., Ltd., manufacturing chemists and druggists, of Low Green Works., Great Horton, Bradford, against Odhams Press, Ltd., of Long Acre, W.C.1, proprietors, printers, and publishers, and "John Bull," and Sir Wyndham Childs, to recover damages for an alleged libel, contained in the issue of "John Bull" dated June 13, 1931. Sir W. Childs was sued as the writer of the article complained of.

The plaintiffs alleged that the words complained of meant that they were dishonest traders who saddled their customers with goods far in excess of the quantity ordered, either by fraudulently altering the order itself or by inducing the customer to sign the same by fraudulently representing that a less quantity had been inserted therein than was actually the case and that they had committed a criminal offence.

The defendants denied that the words complained of were capable of any defamatory meaning. They also pleaded justification and fair comment.

Mr. Norman Birkett, K.C., for the plaintiffs, said the gist of what the defendants had said, was that the company's travellers were dishonest in their methods and that the company had continued to employ them knowing that they were dishonest. Plaintiffs were an old-established firm and made shaving cream and hair cream, and specialised in two preparations for the feet, "Easiped" and "Amovon." No criticism of the products of the company was involved in the case.

In 1904 the business was acquired by Mr. Walter Galloway, who belonged to a well-known Bradford family. The business had been turned into a private limited company, which now employed five travellers. The article complained of was headed "The Dynamite Medicine Man," and alleged that through the travellers, traders had been saddled with goods far in excess of the quantity ordered and that the Chemists Defence Association and trade journals had been flooded with complaints. The plaintiffs were prepared to deal with any case as the situation arose. The large majority of complaints centred around a traveller named Perry, but he would be called and would say that he had not done anything that was in the smallest degree dishonourable, or fraudulent or tricky. There had been a great deal of litigation by the company, but plaintiffs had never lost one case in which the issue was whether they had sent to a customer more goods than had been ordered. On the serious issue of forged orders which was raised in the alleged libel they had never lost a case and their travellers had never failed to go into the witness box to deal with the matter. The six months which followed the publication of the article showed a drop of £2,000 on the previous half-year in plaintiffs' total sales, but it would be difficult to estimate the full amount of the damage which had been done to the company.

Mr. Chas. J. B. Perry, a traveller in the employ of the plaintiffs, denied that he had ever forged any orders, or in any way misrepresented the orders given him. He had never had an order form signed by a customer in blank before he filled it in. After a complaint that an order had been altered each customer was asked to confirm in his own handwriting the total quantity ordered. In some cases customers were given a duplicate copy of the order. Since the publication of the article complained of there had been a terrific change in the attitude of customers.

Sir Patrick Hastings, K.C., for the defendants, cross-examined. In reply to questions, witness denied that he had got a woman customer to order a quantity of goods which he knew she would have on her hands for years. He wrote down all the numbers of his orders before he left the customer. He suggested that customers said they were tricked because it was put into their heads. Witness suggested that customers had deliberately invented a purely fictitious story against him to please other firms. Customers had said that he had misrepresented their order, but that was not true. All his orders were "as straight as a die." Witness declared that chemists, bootmakers, hairdressers and some four newspapers were all in the conspiracy to smash Wynter Bros.

Sir Patrick Hastings: Why do the bootmakers want to smash Wynter Bros.?—Because they believe that they have a grievance.

The hearing is proceeding.

Glue Manufacture

Treatment of Bones Prior to Extraction

A RECENTLY published German process for producing high-grade glue from dried bones involves immersion in baths of certain acids or acid salts which possess a hydrogen ion concentration either above or below that corresponding to the iso-electric point for collagen. Exposure to solutions fulfilling these conditions appears to result in re-hydration of the bone substance without any deterioration in quality. The upper limit of hydrogen ion concentration in accordance with the process is 7, while at the other end of the scale a *pH* of 4.7 to 5.0 is said to give satisfactory results. The process is based upon the recognised fact that glue or collagen exhibit the least tendency to hydration when at the iso-electric point. It is pointed out ("Farben Zeitung," November 4, 1933) that the use of dilute baths in the present process renders it entirely distinct from earlier processes for the treatment of bones with acid or salt solutions.

Chemical Matters in Parliament

Dyestuffs (Import Regulation) Act

IN the House of Commons, on November 23, Mr. H. Williams (Croydon, South) asked the President of the Board of Trade whether, in view of the representations received from the manufacturers concerned in opposition to the proposal that printing inks and lake pigments should be excluded from the Dyestuffs Act, he had any statement to make.

In reply, the President of the Board of Trade (Mr. Runciman) said the representations referred to were carefully considered before it was announced that the Government had decided to adopt the recommendations of the Import Duties Advisory Committee regarding the dyestuffs industry and that a Bill to give effect to those recommendations would be introduced during the present Session. The Committee recommended that the importation of the goods referred to should not be prohibited.

Mr. Williams then asked what steps would be taken to protect the industries concerned by means of tariffs, if they were to lose the protection of the Dyestuffs Act.

Mr. Runciman said that he could not mage any announcement on that, at the moment.

In a further question Mr. Williams asked the President of the Board of Trade what progress had been made by the printing-ink trade as a result of the Dyestuffs Act in respect of output, employment, wages, quality, and prices.

In reply Mr. Runciman said the Joint Industrial Council of the printing-ink and roller-making industry had informed the Board of Trade that between 1913 and 1930, the output and the number of workpeople in the printing-ink industry increased by 100 per cent., the wage bill by 350 per cent. and selling prices by 40 per cent.

Five Deaths at Spondon Works

Report Forwarded to Home Office

THREE employees at the Spondon (Derby) works of British Celanese, Ltd., have died in mysterious circumstances. Two other employees at the works have died during the past two weeks, and though in three cases death was attributed to natural causes it is now thought that possibly all five deaths may be connected.

The men who have died were:—John Newman Wade (30), of Spondon; Elijah Gibson (29), of Marehay, Ripley; Charles William Benniston (33), of Loscoe Road, Heanor; Arthur Sheldon (38), of Long Eaton; and John William Cartwright (29), Larklands, Ilkeston. It is understood that all five men were employed in the textile research department, and that they complained of having been "gassed" by fumes arising from chemicals used in the department in which they worked.

Benniston and Cartwright were taken ill while at work and went home, where they were treated by their own doctors, but subsequently died. As a result of a post-mortem examination Benniston was certified to have died from inflammation of the kidneys and the coroner permitted burial. Cartwright's death was attributed by his medical attendant to acute dilation of the heart and influenza. The next victim was Sheldon, who died in Nottingham General Hospital. Wade and Gibson were sent by their doctors to the Derby Royal Infirmary, where they also died last week. Post-mortem examinations were ordered in the last three cases, and in that of Wade the Derby Borough Coroner ordered that certain organs should be analysed by experts.

A report has been forwarded by the Coroner, to the Home Office, concerning Benniston and Cartwright. Three doctors collaborated in the post-mortem on Benniston, and their report showed that death was due to natural causes. If the Home Office, in the light of all the facts submitted to them, consider that an inquiry should be held on Benniston and Cartwright, there may be an exhumation.

THE Union Espanola de Explosivos S.A. produced 220,000 metric tons of potash salts in the year ended April 30, 1933. It plans to erect a large plant for production of potassium sulphate.

War is Impossible

There is Nothing to Fight For

WRITING in "The Independent" of November 25 on "War for What?" Sir Ernest Benn asserts that there is no cause for war, there is nothing to fight about and war is impossible. It is, of course, true that the Germans might now begin to prepare for war in ten or twenty years' time, but war for what? The German war would be a war wholly to shake off foreign interference, the sort of war for which any self-respecting citizen, certainly any Englishman, would willingly sacrifice himself. That risk, which is a risk, can be avoided by a frank admission of the folly of the policy of the last fifteen years, which, in defiance of all our better traditions and all our decent feelings, has been guided by the notion that Germany could be kept in a position of inequality. We can help to undo the harm of the last fifteen years and bring Germany back to the fellowship of nations by keeping our Foreign Secretary at home, minding our own business, and recognising our lack of any right to join in committees to manage the affairs of other nations.

"Let our aim," he concludes, "be to appease, to calm, to still, to quiet, to allay agitation and excitement, to tranquillise."

Damp Brick Walls

No Effective Waterproofing Treatment Available

REFERRING to the ever-present problem of damp walls, the annual report of the Building Research Board for 1932 (H.M. Stationery Office, price 2s. 6d. net) states that in the case of a brick wall exposed to driving rain, moisture can most easily penetrate the wall, not through the material of the brick or the mortar, but by way of fine cracks formed between them. Waterproofing material, to be effective, must bridge such cracks and be sufficiently elastic to remain effective if the cracks widen.

According to the report, none of the various colourless waterproofing treatments so far tested has proved altogether satisfactory. In the case of six waterproofers exposed on the experimental wall at the Building Research Station, only one continued to show any useful waterproofing effect after twelve months. The failure of these colourless waterproofers is ascribed to the fact that they aim at reducing the permeability to moisture of the brick itself rather than at forming a continuous film. They do not, therefore, deal with the real source of the trouble, and are likely to be effective only in cases of slight damp penetration, and will in any case require periodical renewal. Three samples of proprietary coloured waterproofers were tested during the year. Two of these were pigmented bituminous emulsions and one an imitation stone paint. With regard to this latter material, the report says that it showed good resistance to weathering and was considered likely to remain effective and to retain a good appearance for a reasonably long period in comparison with other types of waterproofers tested.

Japanese Dye Industry

THE Japanese Government has decided on a policy designed to make the country self-supplying in the matter of dyestuffs. The tentative budget of the Ministry of Commerce and Industry for the next fiscal year contains an item of 300,000 yen to be used for the encouragement of the production of 28 different kinds of special dyes. Most of this amount will be given to the Institute for Industrial Research and the chemical branches of the imperial universities. The Ministry of Commerce and Industry also plans to give substantial grants to firms engaged in the production of dyestuffs, during the next fiscal year. Imports of synthetic dyes into Japan during the first six months of 1933 totalled 1,041,014 kin (value 5,326,839 yen), compared with 2,640,635 kin (value 6,122,196 yen) in the first half of 1932. Imports of artificial indigo have drastically declined as a result of the substitution of Japanese-made sulphur dyes and indanthrene.

News from the Allied Industries

Cement

SPEAKING AT NORTHFLEET, Mr. A. C. Davis, managing director of the Associated Portland Cement Manufacturers, said that owing to import duties on cement, 200,000 extra tons were being manufactured in this country. The factories of his own company were working at full capacity, and if trade continued at the same rate, more factories would shortly have to be opened.

Artificial Silk

A PESSIMISTIC VIEW of the German rayon situation is taken in a publication of the Association of German Viscose Rayon Producers which mentions that 40 per cent. of the capacity of the varous factories are idle while the September imports of 977,000 kg. represented about 40 per cent. of the total consumption. Compared with the second quarter of 1933, an appreciable reduction in the exports during the third quarter has been registered, the decline being from 8 to 5.4 millions RM.

Rubber

THAT GOVERNMENT CONTROL of rubber production does not present insurmountable difficulties is reported to be the opinion of representatives who attended the rubber conference at Batavia on November 23. Discussion was understood to be on the following lines:—(1) The allotment to every grower of a certain percentage of recent production capacity. To control the effective operation of this restriction, growers would be obliged to send their rubber to indicated markets during certain months. (2) The levying of *ad valorem* export duties on sliding scales. The total export quota of the Dutch East Indies would be regulated by international agreement and, when allotted, would be distributed among the various provinces.

Canning

A NEW CENSUS OF BRITISH CANNING ACTIVITIES, designed to provide the first exact and official index of production, is shortly to be made. An agreement has been reached by which British canners will individually inform the Bank of England from time to time as to the amount of their production. These figures are to be treated confidentially, and the Bank of England, it is understood, will give the totals to the Fruit and Vegetable Canners' Association for record purposes. This agreement, which is considered to be of considerable importance in canning development, is expected to overcome the hesitancy of some canners to disclose the extent of their packs. Hitherto, the Ministry of Agriculture has only been able to publish estimates of production.

Tanning

EXPORTS OF BRITISH MANUFACTURED GLAZED KID have been steadily rising for a number of years now and they reached a new record of 224,000 sq. ft. in September. The principal increases were in shipments to Sweden, Canada, Holland and Switzerland. The total exports of glazed kid for the first nine months of this year were over 7,000,000 sq. ft. compared with 3,628,000 for the corresponding period last year. A new company has been registered to take over the manufacture of this leather at Worcester and still further increased production may be confidently anticipated. Reptile leathers continue to be in demand and several new synthetic tanning products have been marketed recently for tanning these skins. White cellulose finished leathers are being produced in large quantities for next year's spring and summer goods. All the chrome tanners continue to be very busily engaged and production has nearly reached a maximum with the present plants. Inquiries continue to be made on behalf of foreign tanners who propose to commence manufacturing operations in this country. Exports of sole and dressing leathers for the first ten months of this year are all considerably in excess of those for the corresponding periods of the years 1932 and 1931.

Paint and Varnish

JENSON AND NICHOLSON, LTD., paint and varnish manufacturers, proposes to extinguish trading losses of £55,477, and to write down investments by £44,906, by reducing the value of the ordinary shares from £1 to 5s. each. Preference arrears are to be met by the issue of 6 per cent. pre-preference. The rates of preference dividends are to be reduced from 7½ per cent., to 6½ per cent. and from 8 per cent. to 7 per cent. respectively.

Sugar

THE COST OF THE THREE NEW SUGAR PLANTS in Ireland is estimated at £1,500,000, of which £900,000 will be spent in Ireland and the balance abroad. Three German machine makers—the Hallesche Maschinenfabrik & Eisengieberei, the Maschinenfabrik Buckau and the Maschinenfabrik Sangershausen—have received orders. Contracts have also been placed in Czechoslovakia. The Siemens-Schuckert works are competing for the order for the electric equipment.

Non-Ferrous Metals

THE MOND NICKEL CO., LTD. (a subsidiary of The International Nickel Co. of Canada Ltd.) gives notice that it will, on June 1, 1934, redeem the whole of its 5 per cent. first mortgage debenture stock then outstanding at the rate of £105 for every £100 stock held plus accrued interest. Notice is also given that Henry Wiggin and Co. Ltd. (a subsidiary of The Mond Nickel Co., Ltd.) will, on the same date, redeem the whole of its 6¼ per cent. first mortgage debentures then outstanding at the rate of £104 for each £100 debenture held plus accrued interest.

Information on Helium

A Study by the United States Bureau of Mines

THE United States Bureau of Mines has recently published a summary of knowledge relating to the history, properties, sources, production and uses of helium. (Information Circular 6745). The various sources of helium are dwelt upon, ending with the main source, namely, in certain natural gases, of which the United States possesses the sole known supply sufficient for aeronautic demands, and the story then goes on to take up actual production of helium on a large scale, together with the history of its development. The Bureau of Mines helium investigation, conservation, and production project is described and its helium production plant at Amarillo, Texas, is discussed in broad lines. The transportation of helium, and purification after use in airships, and large-scale storage of helium are among the topics treated. Finally, the cryogenic or low-temperature laboratory which was formally opened by Madame Curie, in 1921, in Washington, and is now located at the Amarillo Plant, is given place in the picture, and it is brought out that the success of the Bureau of Mines helium production process has been based in a large measure on the data evolved through researches by its staff.

The paper comes to a close with a section on uses for helium, and it is related that, among these uses, the Bureau of Mines has practically demonstrated how the application of artificial atmospheres made up of helium and oxygen can be made to facilitate the work and add to the safety of deep-sea divers, and laborers in caissons, the duties of both of these classes of men being necessarily carried on under pressures increased above normal. The remarkable phenomenon of supra—or super-conductivity is here referred to, in which, through the agency of liquid helium (at temperatures but a few degrees above the point of absolute cold) electric currents induced in certain substances continue on in undiminished strength indefinitely so long as these temperatures are maintained.

IN preparing esters by reaction of organic acids and alcohols, E. Thielepape ("Berichte," 1933, *66*, 1454) points out that calcium carbide is a valuable agent for quantitative removal of the reaction water.

Inventions in the Chemical Industry

Specifications Accepted and Applications for Patents

THE following information is prepared from the Official Patents Journal. Printed copies of Specifications accepted may be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, at 1s. each. The numbers given under "Applications for Patents" are for reference in all correspondence up to the acceptance of the Complete Specification.

Specifications Accepted with Dates of Application

APPLICATION of colour to cellulose ester or ether materials.—Imperial Chemical Industries, Ltd., S. T. McQueen and A. Stewart. March 11, 1932. 401,665.

PIPE JOINT.—J. Holt and Imperial Chemical Industries, Ltd. April 19, 1932. 401,709.

PLASTIC MASSES from methacrylic acid esters, manufacture.—F. B. Dehn (Rohm and Haas Akt.-Ges.). April 29, 1932. 401,653.

NON-BENZENOID HYDROCARBONS from acetylene, methods of forming.—W. W. Triggs (E. I. Du Pont de Nemours and Co.). May 11, 1932. 401,678.

PROCESS for effecting or facilitating the decomposition of liquids into gases.—A. Kilgus. May 13, 1931. 401,688.

INSULATION of receptacles adapted to contain solid carbon dioxide.—S. D. Ware. May 12, 1932. 401,670.

WATERPROOFING porous materials.—J. Y. Johnson (I. G. Farbenindustrie). May 12, 1932. 401,712.

PRODUCTION of covering layers from carbamide-aldehyde condensation products.—A. G. Bloxam (Soc. of Chemical Industry in Basle). May 12, 1932. 401,689.

BARBITURIC ACID series and salts thereof, process for manufacture of derivatives.—I. G. Farbenindustrie. May 16, 1931. 401,693.

CONVERTING hydrocarbon oils.—Texaco Development Corporation. May 16, 1931. 401,694.

AROMATIC hydrocarbons, hydrogenation.—E. D. Kamm and Imperial Chemical Industries, Ltd. May 18, 1932. 401,724.

DYEING of acetate artificial silk.—J. Y. Johnson (I. G. Farbenindustrie). May 19, 1932. 401,731.

CELLULOSE ESTERS for the purpose of increasing the capacity for taking up dyestuffs, treatment.—I. G. Farbenindustrie. May 19, 1931. 401,735.

ZIRCONIA, production.—F. L. Clark and Imperial Chemical Industries, Ltd. May 23, 1932. 401,756.

STABLE granulated calcium cyanamide, process for preparing.—American Cyanamid Co. April 27, 1932. 401,788.

SOAP and the preparation thereof.—P. Kuller. Oct. 9, 1931. 401,866.

TETRAZOLES, manufacture.—Knoll Akt.-Ges. Chemische Fabriken. Aug. 10, 1932. 401,887.

DYEING of wool.—Soc. of Chemical Industry in Basle. March 9, 1932. 401,938.

CONVERSION of ferro-phosphorous into phosphate products.—W. J. Tennant (Victor Chemical Works). March 28, 1933. 401,950.

THIOCYANATES of aromatic quarternary ammonium bases, production.—Kali-Chemie Akt.-Ges. April 12, 1932. 401,954.

MOULDED ARTICLES from condensation products derived from aromatic amines and aldehydes, manufacture.—Soc. of Chemical Industry in Basle. May 4, 1932. 401,965.

SYNTHETIC RESINS and compositions containing the same.—British Celanese, Ltd. April 26, 1932. 401,971.

THORIUM OXIDE and thorium salts, manufacture.—Chemische Fabrik von Heyden Akt.-Ges. Dec. 22, 1932. 402,010.

Complete Specifications Open to Public Inspection

DERIVATIVES of the dihydroxy-benzenes and process for the manufacture of same.—F. Hoffmann-La Roche and Co. Akt.-Ges. May 14, 1932. 12612/33.

CARBON DIOXIDE ICE, production.—Naamlooze Vennootschap Midden Europeesche Octrooi-Maatschappij. May 16, 1932. 13160/33.

RESINOUS PRODUCTS, manufacture.—E. I. Du Pont de Nemours and Co. May 16, 1932. 13765/33.

NEUTRAL WATER-SOLUBLE DERIVATIVES of amino-arylarsenostibio compounds, manufacture.—I. G. Farbenindustrie. May 14, 1932. 13992/33.

AZO DYESTUFFS, manufacture.—Soc. of Chemical Industry in Basle. May 15, 1932. 14061/33.

THERAPEUTICALLY-VALUABLE COMPOUNDS, manufacture of solutions.—I. G. Farbenindustrie. May 14, 1932. 14062/33.

NEUTRAL WATER-SOLUBLE ORGANO-METALLIC COMPOUNDS, manufacture.—I. G. Farbenindustrie. May 14, 1932. 14099/33.

CONVERSION PRODUCTS of casein, manufacture.—I. G. Farbenindustrie. May 17, 1932. 14207/33.

AZO DYESTUFFS, manufacture.—E. I. Du Pont de Nemours and Co. May 17, 1932. 14333/33.

NEUTRAL WATER-SOLUBLE COMPLEX COMPOUNDS of trivalent antimony, manufacture.—I. G. Farbenindustrie. May 19, 1932. 14438/33.

Applications for Patents

FILTERS for hydrocarbons, etc.—J. Muller. Nov. 6. (France, Nov. 5, '32.) 30835.

LEAD, electrolytic production.—National Processes, Ltd., and S. Robson. Nov. 6. 30845.

ZINC METAL, purifying.—New Jersey Zinc Co. Nov. 4. (United States, Jan. 10.) 30700.

ALUMINIUM FLUORIDE, manufacture.—C. J. Saurin and J. Wilkinson & Son, Ltd. Nov. 3. 30536.

ALUMINIUM FLUORIDE, manufacture.—C. J. Saurin and J. Wilkinson and Son, Ltd. Nov. 3. 30536.

MIXED CHROMIFEROUS AZO-DYESTUFFS, manufacture.—Soc. of Chemical Industry in Basle. Nov. 6. (Switzerland, Nov. 7, '32.) 30796.

CHROMIFEROUS AZO-DYESTUFFS, manufacture.—Soc. of Chemical Industry in Basle. Nov. 8. (Switzerland, Nov. 8, '32.) 31141.

APPARATUS for drying, calcining, cement, lime, etc. E. Allen and Co., Ltd., Nov. 9. 31293.

DYEING.—S. H. Baron. Nov. 10. 31332.

MANUFACTURING DYE, method.—S. J. Beckett and H. H. Evans. Nov. 9. 31256.

SIMULTANEOUSLY CARBONISING and cracking oils, etc.—H. A. Brassert and Co., Ltd., and A. Fisher. Nov. 15. 31903.

AZO DYESTUFFS, manufacture.—A. Carpmael (I. G. Farbenindustrie). Nov. 11. 31488.

CERAMIC RAW MATERIALS, preparation.—Doulton and Co., Ltd., and J. P. Lorains. Nov. 15. 31904.

ESTERS of unsaturated monocarboxylic aliphatic acids, production.—E. I. Du Pont de Nemours and Co., and D. J. Loder. Nov. 9. 31221.

MIXED ESTERS of polyhydric alcohols and resins, etc., manufacture.—E. I. Du Pont de Nemours and Co., and C. G. Gauerke. Nov. 10. 31362.

REDUCTION PRODUCTS of indigo series.—E. I. Du Pont de Nemours and Co., and A. L. Fox. Nov. 13. 31564.

CELLULOSE DERIVATIVES, compositions containing.—E. I. Du Pont de Nemours and Co. Nov. 14. 31751.

ANTHRAQUINONE DYES, manufacture.—S. Ellingworth, N. H. Haddock, Imperial Chemical Industries, Ltd., F. Lodge, C. H. Lumsden. Nov. 9. 31219.

CONVERTING HYDROCARBONS.—K. R. Finsterbusch. Nov. 14. 31774.

NONFERROUS ALLOYS.—K. Fraser. Nov. 14. 31675.

CHROMIC ACID, preparation.—W. V. Gilbert and R. E. Pearson. Nov. 9, 31289.

METAL SURFACES, treatment.—Grasselli Chemical Co. Nov. 13. 31565.

INTERMEDIATE COMPOUNDS for manufacture of dyestuffs.—N. H. Haddock. Nov. 15. 31844.

CRUDE NICKEL CARBONYL, purification. C. F. R. Harrison and A. E. Wallis. Nov. 11. 31451.

NICKEL CARBONYL, preparation and purification.—C. F. R. Harrison and A. E. Wallis. Nov. 11. 31452.

DERIVATIVES OF GLYCEROL, manufacture.—E. L. Holmes. Nov. 10. 31339.

ORGANIC DYESTUFFS, adjustment of strength.—I. G. Farbenindustrie and J. Y. Johnson. Nov. 13. 31604.

Questions and Answers

READERS are invited to co-operate in supplying information on the subjects of the queries raised under this heading.

206.—RESTRAINER FOR ACID BATHS.—A firm of engineers wishes to know the makers of a restrainer for acid baths marketed under the name of "Rodine."

For a number of years up to the end of 1931 Sir S. W. Royse & Co., Ltd., 20 Albert Square, Manchester, were sole distributors of the "Rodine" pickle restrainer, but then gave this up as they placed on the market "Royzine," which is entirely of British manufacture. We are informed that the sales of "Royzine" are advancing monthly and the makers claim that it is the most widely used restrainer at present on the market. It is efficient and economical, both in use and initial cost. "Royzine" is in liquid form and is therefore immediately soluble in the pickle solution. It is regularly used in tinplate mills, tube mills, wire mills, steel mills, galvanising works, steel strip mills, etc.

Weekly Prices of British Chemical Products

Review of Current Market Conditions

PRICES of chemical products have not changed to any considerable extent during the week, and the home market has been steady, but overseas trade continues to suffer from the changes in exchange rates. There has been a satisfactory demand for industrial chemicals. Unsatisfactory conditions prevail in the arsenic market, and there is little interest in potassium chlorate, copper sulphate and caustic potash. Coal tar products have been in good demand, and substantial business has been done in cresylic acid and creosote oil. Business in pharmaceutical chemicals has been chiefly for small quantities for immediate delivery. Aspirin has been in good demand, and benzoic acid, sodium benzoate, lactic acid and vanillin have met with a fair inquiry. Sales of bromides have shown some improvement. There has been keen competition from the Continent for orders for hexamine. Salicylic acid and salicylates are still dull items and the phenacetin market is unsteady.

LONDON.—The London chemical market continues to receive an improved volume of inquiry and prices generally remain firm. The coal tar products market remains firm and prices are unchanged.

MANCHESTER.—In some quarters business in chemicals on the Manchester market during the past week is reported to have been rather quieter than during recent weeks, but this is explained largely by a seasonal slowing down so far as new buying is concerned. From the point of view of the call for heavy chemicals against old orders the position, however, is little if any worse than before. Values of a number of imported materials, due to exchange fluctuations, have been rather uncertain, but generally speaking, the price position is quite steady. The recovery in the non-ferrous metals since the last report has improved the undertone of the copper and lead compounds, but values of these are much the same as before. New buying in pitch remains poor, but the demand for a number of the light by-products keeps up fairly well and after the recent advances little weakness in prices has occurred.

SCOTLAND.—The main business at the present time on the Scottish heavy chemical market is the renewing of contracts over the year 1934. Contracts generally are being placed ahead of the usual time.

General Chemicals

ACETONE.—LONDON: £65 to £68 per ton; SCOTLAND: £66 to £68 ex wharf, according to quantity.

ACID, ACETIC.—Tech. 80%, £38 5s. to £40 5s.; pure 80% £39 5s.; tech., 40%, £20 5s. to £21 15s.; tech., 60%, £28 10s. to £30 10s. LONDON: Tech., 80%, £38 5s. to £40 5s.; pure 80%, £39 5s. to £41 5s.; tech., 40%, £20 5s. to £22 5s.; tech., 60%, £29 5s. to £31 5s. SCOTLAND: Glacial 98/100%, £48 to £52; pure 80%, £39 5s.; tech. 80%, £38 5s. d/d buyers' premises Great Britain. MANCHESTER: 80%, commercial, £39; tech. glacial, £52.

ACID, BORIC.—SCOTLAND: Granulated commercial, £26 10s. per ton; B.P. crystals, £35 10s.; B.P. powder, £36 10s. in 1-cwt. bags d/d free Great Britain in 1-ton lots upwards.

ACID, CHROMIC.—10½d. per lb., less 2½%, d/d U.K.

ACID, CITRIC.—LONDON: 9½d. per lb.; less 5%. MANCHESTER: 9½d.

ACID, CRESYLIC.—97/99%, 1s. 1d. to 1s. 7d. per gal.; 98/100%, 1s. 5d. to 2s.

ACID, FORMIC.—LONDON: £47 10s. per ton.

ACID, HYDROCHLORIC.—Spot, 4s. to 6s. carboy d/d according to purity, strength and locality. SCOTLAND: Arsenical quality, 4s.; dearsenicated, 5s. ex works, full wagon loads.

ACID, LACTIC.—LANCASHIRE: Dark tech., 50% by vol., £24 10s. per ton; 50% by weight, £28 10s.; 80% by weight, £48; pale tech., 50% by vol., £28; 50% by weight, £33; 80% by weight, £53; edible, 50% by vol., £41. One-ton lots ex works, barrels free.

ACID, NITRIC.—80° Tw. spot, £18 to £25 per ton makers' works, according to district and quality. SCOTLAND: 80°, £23 ex station full truck loads.

ACID, OXALIC.—LONDON: £47 17s. 6d. to £57 10s. per ton, according to packages and position. SCOTLAND: 98/100%, £49 to £52 ex store. MANCHESTER: £49 to £54 ex store.

ACID, SULPHURIC.—Average prices f.o.r. British makers' works, with slight variations owing to local considerations; 140° Tw. crude acid, £3 per ton; 168° Tw. arsenical £5 10s.; 168° Tw. non-arsenical, £6 15s. SCOTLAND: 144° quality, £3 12s. 6d.; 168°, £7; dearsenicated, 20s. per ton extra.

ACID, TARTARIC.—LONDON: 11½d. per lb. SCOTLAND: B.P. crystals, 11d., carriage paid. MANCHESTER: 1s. to 1s. 0½d.

ALUM.—SCOTLAND: Lump potash, £9 per ton ex store.

ALUMINA SULPHATE.—LONDON: £7 10s. to £8 per ton. SCOTLAND: £8 to £8 10s. ex store.

AMMONIA, ANHYDROUS.—Spot, 10d. per lb. d/d in cylinders. SCOTLAND: 10d. to 1s. containers extra and returnable.

AMMONIA, LIQUID.—SCOTLAND: 80°, 2½d. to 3d. per lb., d/d.

AMMONIUM BICHROMATE.—8d. per lb. d/d U.K.

AMMONIUM CARBONATE.—SCOTLAND: Lump, £32 per ton; powdered, £34, in 5-cwt. casks d/d buyers' premises U.K.

AMMONIUM CHLORIDE.—£37 to £45 per ton, carriage paid. LONDON: Fine white crystals, £18 to £19. (See also Salammoniac.)

AMMONIUM CHLORIDE (MURIATE).—SCOTLAND: British dog tooth crystals, £32 to £35 per ton carriage paid according to quantity. (See also Salammoniac.)

ANTIMONY OXIDE.—SCOTLAND: Spot, £26 per ton, c.i.f. U.K. ports.

ANTIMONY SULPHIDE.—Golden 6½d. to 1s. 1½d. per lb.; crimson, 1s. 3d. to 1s. 5d. per lb., according to quality.

ARSENIC.—LONDON: £16 10s. c.i.f. main U.K. ports for imported material; Cornish nominal, £22 10s. f.o.r. mines. SCOTLAND: White powdered, £23 ex wharf. MANCHESTER: White powdered Cornish, £22 10s. at mines.

ARSENIC SULPHIDE.—Yellow, 1s. 5d. to 1s. 7d. per lb.

BARIUM CHLORIDE.—£11 per ton.

BISULPHITE OF LIME.—£6 10s. per ton f.o.r. London.

BLEACHING POWDER.—Spot 35/37% £7 19s. per ton d/d station in casks, special terms for contract. SCOTLAND: £8 15s. in 5/6 cwt. casks.

BORAX, COMMERCIAL.—Granulated, £15 10s. per ton; powder, £17 packed in 1-cwt. bags, carriage paid any station Great Britain. Prices are for 1-ton lots and upwards.

CADMIUM SULPHIDE.—2s. 7d. to 2s. 11d.

CALCIUM CHLORIDE.—Solid 70/75% spot, £5 5s. per ton d/d station in drums.

CARBON BISULPHIDE.—£30 to £32 per ton, drums extra.

CARBON BLACK.—3½d. to 5d. per lb.

CARBON TETRACHLORIDE.—£41 to £46 per ton, drums extra.

CHROMIUM OXIDE.—10¾d. per lb., according to quantity d/d U.K. Green, 1s. 2d. per lb.

CHROMETAN.—Crystals, 3¼d. per lb. Liquor, £19 10s. per ton d/d.

COPPERAS (GREEN).—SCOTLAND: £3 15s. per ton, f.o.r. or ex works.

CREAM OF TARTAR.—LONDON: £3 19s. per cwt.

DINITROTOLUENE.—66/68° C., 9d. per lb.

DIPHENYLGUANIDINE.—2s. 2d. per lb.

FORMALDEHYDE.—LONDON: £28 per ton. SCOTLAND: 40%, £28 ex store.

LAMPBLACK.—£45 to £48 per ton.

LEAD ACETATE.—LONDON: White, £34 10s. per ton; brown, £1 per ton less. SCOTLAND: White crystals, £33 to £35; brown, £1 per ton less. MANCHESTER: White, £34 to £36; brown, £32

LEAD NITRATE.—£28 per ton.

LEAD, RED.—SCOTLAND: £25 10s. to £28 per ton d/d buyer's works.

LEAD, WHITE.—SCOTLAND: £39 per ton, carriage paid.

LITHOPONE.—30%, £17 10s. to £18 per ton.

MAGNESITE.—SCOTLAND: Ground Calcined £9 per ton ex store.

METHYLATED SPIRIT.—61 O.P. Industrial 1s. 8d. to 2s. 3d. per gal. Pyridinised Industrial, 1s. 10d. to 2s. 5d. Mineralised, 2s. 9d. to 3s. 3d. 64 O.P. 1d. extra in all cases. Prices according to quantities. SCOTLAND: Industrial 64 O.P., 1s. 9d. to 2s. 4d.

NICKEL AMMONIUM SULPHATE.—£49 per ton d/d.

NICKEL SULPHATE.—£49 per ton d/d.

PHENOL.—9d. to 10d. per lb. without engagement.

POTASH, CAUSTIC.—LONDON: £42. MANCHESTER: £41.

POTASSIUM BICHROMATE.—Crystals and Granular, 5d. per lb. net d/d U.K. Discount according to quantity. Ground 5¾d. LONDON: 5d. per lb. with usual discounts for contracts. SCOTLAND: 5d. d/d U.K. or c.i.f. Irish Ports. MANCHESTER: 5d.

POTASSIUM CHLORATE.—LONDON: £37 to £40 per ton. SCOTLAND: 99¾/100%, powder, £37. MANCHESTER: £38.

POTASSIUM CHROMATE.—6¼d. per lb. d/d U.K.

POTASSIUM NITRATE.—SCOTLAND: Refined Granulated £29 per ton c.i.f. U.K. ports. Spot, £30 per ton ex store.

POTASSIUM PERMANGANATE.—LONDON: 8¾d. to 9d. per lb. SCOTLAND: B.P. crystals, 8¼d. MANCHESTER: Commercial, 8¼d. B.P., 9d.

POTASSIUM PRUSSIATE.—LONDON: 8¼d. to 8¾d. per lb. SCOTLAND: Yellow spot material, 8¼d. ex store. MANCHESTER: Yellow, 8½d.

SALAMMONIAC.—First lump spot, £42 17s. 6d. per ton d/d in barrels.

SODA ASH.—58% spot, £5 17s. 6d. per ton f.o.r. in bags, special terms for contracts.

SODA, CAUSTIC.—Solid 76/77° spot, £14 5s. per ton d/d station. SCOTLAND: Powdered 98/99%, £17 10s. in drums, £18 15s. in casks, Solid 76/77%, £14 10s. in drums; 70/73%, £14 12s. 6d., carriage paid buyer's station, minimum 4-ton lots; contracts 10s. per ton less. MANCHESTER: £13 5s. to £14 10s. contracts.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton d/d station or ex depot in 2-cwt. bags.

SODIUM ACETATE.—£22 per ton. LONDON: £23.

SODIUM BICARBONATE.—Refined spot, £10 10s. per ton d/d station in bags. SCOTLAND: Refined recrystallised £10 10s. ex quay or station. MANCHESTER: £10 10s.

SODIUM BICHROMATE.—Crystals cake and powder 4d. per lb. net d/d U.K. discount according to quantity. Anhydrous, 5d. per lb. LONDON: 4d. per lb. with discounts for quantities. SCOTLAND: 4d. delivered buyer's premises with concession for contracts. MANCHESTER: 4d. less 1 to 3½% contracts, 4d. spot lots.

SODIUM BISULPHITE POWDER.—60/62%, £16 10s. per ton d/d 1-cwt. iron drums for home trade.

SODIUM CARBONATE (SODA CRYSTALS).—SCOTLAND: £5 to £5 5s. per ton ex quay or station. Powdered or pea quality 7s. 6d. per ton extra. Light Soda Ash £7 ex quay, min. 4-ton lots with reductions for contracts.

SODIUM CHLORATE.—£32 per ton.

SODIUM CHROMATE.—3¾d. per lb. d/d U.K.

SODIUM HYPOSULPHITE.—SCOTLAND: Large crystals English manufacture, £9 5s. per ton ex stations, min. 4-ton lots. Pea crystals, £15 ex station, 4-ton lots. MANCHESTER: Commercial, £9 5s.; photographic, £15.

SODIUM NITRITE.—LONDON: Spot, £18 to £20 per ton d/d station in drums.

SODIUM PERBORATE.—LONDON: 10d. per lb.

SODIUM PHOSPHATE.—£12 10s. per ton.

SODIUM PRUSSIATE.—LONDON: 5d. to 5½d. per lb. SCOTLAND: 5d. to 5¾d. ex store. MANCHESTER: 4¾d. to 5¾d.

SODIUM SILICATE.—140° Tw. Spot £8 5s. per ton d/d station, returnable drums.

SODIUM SULPHATE (GLAUBER SALTS).—£4 2s. 6d. per ton d/d. SCOTLAND: English material £3 15s.

SULPHATE OF COPPER.—MANCHESTER: £15 10s. per ton f.o.b.

Essential Oils

CITRONELLA.—Java, 2s. 1d. per lb.; Ceylon, 2s.

PEPPERMINT.—Japanese, 4s. per lb.; Wayne County, 12s. 6d.

Coal Tar Products

ACID, CARBOLIC.—Crystals, 9d. to 10d. per lb.; crude, 60's, 2s. 5d. to 2s. 6d. per gal. MANCHESTER: Crystals, 9d. per lb.; crude, 2s. 6d. per gal. SCOTLAND: 60'7, 2s. 6d. to 2s. 7d.

ACID, CRESYLIC.—90/100%, 1s. 6d. to 1s. 9d. per gal.; pale, 98%, 1s. 4d. to 1s. 5d.; pale 95%, 11d. to 11½d.; dark, 10d., all according to specification; refined, 1s. 8d. to 1s. 9d. LONDON: 98/100%, 1s. 3d.; dark, 95/97%, 11d. SCOTLAND: Pale, 99/100%, 1s. 3d. to 1s. 4d.; 97/99%, 1s. to 1s. 1d.; dark, 97/99%, 11d. to 1s.; high boiling acid, 2s. 6d. to 3s.

ANTHRACENE OIL.—Strained, 4½d. per gal.

BENZOL.—At works, crude, 10d. to 10½d. per gal.; standard motor 1s. 5d. to 1s. 5½d.; 90%, 1s. 6d. to 1s. 7d.; pure, 1s. 8½d. to 1s. 9d. LONDON: Motor, 1s. 6½d. SCOTLAND: Motor, 1s. 6½d. to 1s. 7½d.; 90%, 2s. 0½d. to 2s. 1½d.

CREOSOTE.—B.S.I. Specification standard, 3d. to 3½d. per gal. f.o.r. Home, 3¾d. d/d. LONDON: 3d. to 3½d. f.o.r. North; 4d. to 4½d. London. MANCHESTER: 3d. to 4½d. SCOTLAND: Specification oils, 3½d. to 4d.; washed oil, 3½d. to 4d.; light, 3½d.; heavy, 4½d. to 5d

NAPHTHA.—Solvent, 90/160%, 1s. 4d. to 1s. 5d. per gal.; 95/160%, 1s. 8d. to 1s. 9d.; 99/190%, 11d. to 1s. 1d. LONDON: Solvent, 1s. 3½d. to 1s. 4d.; heavy, 11d. to 1s. 0½d. f.o.r. SCOTLAND: 90/160%, 1s. 3d. to 1s. 3½d.; 90/190%, 11d. to 1s. 2d.

NAPHTHALENE.—Crude, Hot-Pressed, £6 1s. 3d. per ton. Flaked £10 per ton. Purified crystals, £9 15s. per ton in bags. LONDON: Fire lighter quality, £3 to £3 10s.; 74/76 quality, £4 to £4 10s.; 76/78 quality, £5 10s. to £6. SCOTLAND: 40s. to 50s.; whizzed, 70s. to 75s.

PITCH.—Medium soft, £3 15s. per ton. SCOTLAND: £3 15s. to £4 f.o.b. Glasgow. MANCHESTER: £3 7s. 6d. to £3 10s. f.o.b. LONDON: £3 15s. f.o.b. East Coast port for next season's shipment.

PYRIDINE.—90/140, 5s. to 5s. 6d. per gal.; 90/180, 2s. to 2s 6d. SCOTLAND: 90/160%, 4s. to 5s.; 90/220%, 1s. 9d. to 2s. naked.

REFINED COAL TAR.—SCOTLAND: 4d. per gal.

TOLUOL.—90%, 2s. 9d. to 2s. 10d. per gal.; pure, 3s. 3d.

XYLOL.—Commercial, 2s. 9d. to 2s. 10d. per gal.; pure, 3s.

Intermediates and Dyes

ACID, BENZOIC, 1914 B.P. (ex Toluol).—1s. 9¼d. per lb.

ACID, GAMMA.—Spot, 4s. per lb. 100% d/d buyer's works.

ACID, H.—Spot, 2s. 4¼d. per lb. 100% d/d buyer's works.

ACID, NEVILLE AND WINTHER.—Spot, 3s. per lb. 100% d/d buyer's works.

ACID, SULPHANILIC.—Spot, 8d. per lb. 100% d/d buyer's works.

ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.

ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.

BENZALDEHYDE.—Spot, 1s. 8d. per lb., packages extra.

BENZIDINE BASE.—Spot, 2s. 5d. per lb. 100% d/d buyer's works.

p-CRESOL 34-5° C.—1s. 9d. per lb. in ton lots.

m-CRESOL 98/100%.—2s. 3d. per lb. in ton lots.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—Spot, 1s. 6d. per lb., package extra.

DINITROBENZENE.—8d. per lb.

DINITROTOLUENE.—48/50° C., 8½d. per lb.; 66/68° C. 10d.

DIPHENYLAMINE.—Spot, 2s. per lb., d/d buyer's works.

α-NAPHTHOL.—Spot, 2s. 4d. per lb., d/d buyer's works.

β-NAPHTHOL.—Spot, £78 15s. per ton in paper bags; £79 5s. in casks, in 1-ton lots.

α-NAPHTHYLAMINE.—Spot, 11½d. per lb., d/d buyer's works.

β-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.

o-NITRANILINE.—5s. 10d. per lb.

m-NITRANILINE.—Spot, 2s. 7d. per lb. d/d buyer's works.

p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

NITROBENZENE.—Spot, 4½d. per lb.; 5-cwt. lots, drums extra.

NITRONAPHTHALENE.—9d. per lb.

SODIUM NAPHTHIONATE.—Spot, 1s. 9d. per lb.

o-TOLUIDINE.—Spot, 9½d. per lb., drums extra, d/d buyer's works.

p-TOLUIDINE.—Spot, 1s. 11d. per lb., d/d buyer's works.

m-XYLIDINE ACETATE.—4s. 6d. per lb.

Nitrogen Fertilisers

SULPHATE OF AMMONIA.—Home, £7 per ton; export, nominal, £6 10s. f.o.b. U.K. ports in single bags.

CYANAMIDE.—£7 2s. per ton, carriage paid to railway station.

NITRATE OF SODA.—£7 13s. 6d. per ton nearest station.

NITRO-CHALK.—£7 5s. per ton nearest station.

CONCENTRATED COMPLETE FERTILISERS.—£10 15s. to £11 6s. per ton according to percentage of constituents.

NITROGEN PHOSPHATE FERTILISERS.—£10 5s. to £13 15s. per ton according to percentage of constituents.

Latest Oil Prices

LONDON, Nov. 29.—LINSEED OIL was firm. Spot, £20 15s. (small quantities 30s. extra); Dec., £19 7s. 6d.; Jan.-April, £19 15s.; May-Aug., £20, naked. RAPE OIL was quiet. Crude extracted, £27; technical refined, £28 10s., naked ex wharf. COTTON OIL was steady. Egyptian crude, £19 10s.; refined common edible, £17 10s.; and deodorised, £19, naked, ex mill (small lots 30s. extra). TURPENTINE was quiet. American, spot, 42s. 6d. per cwt.

British Cyanides Co. Ltd.

Important New Developments

THE annual ordinary general meeting of the British Cyanides Co., Ltd., was held in London on November 29. Mr. Kenneth M. Chance (chairman and managing director) said the chemical factory had been fully employed since January 1, and trade in chemicals manufactured at Oldbury had, on the whole, been good. At the present time it was very good. The demand for Beetle moulding powders had once more shown a satisfactory increase. At Streetly the moulding department for phenol formaldehyde powders, commonly known as bakelite, had suffered from the setback in the radio business which became severe last winter.

Mr. Chance also made reference to the Pollopas patents. The patents purchased covered the British Empire (except Canada), Italy and Scandinavia, and the purchase price of the patents with the rights and the business that came with them was £50,000, payable as to £30,000 in ordinary shares at par and as to £20,000 in the form of the company's holding in the Synthetic Plasties Co. He said shareholders might think that the price they had paid was too high. It possibly would have been had it been the patents only that they were purchasing, but they had obtained in addition a business that was paying them in profits satisfactory interest on their investment, and they had come to a working agreement with their late competitors, the Pollopas associates in Europe, on lines that should be of great benefit to the company and to the industry as a whole.

The prospects of the company, added Mr. Chance, were now definitely bound up in the prospects of the plastics industry as a whole. Moulders in this country had many advantages over their foreign competitors who moulded urea-type powders, among which was the fact that the price of those powders was lower in England than in any country in Europe. With regard to the two new lines, the lacquer resin and the new method of decoration, it was impossible to ignore the wide interest which was being taken in the resin by manufacturers of lacquers in this country. The chemists at Oldbury were now working out in detail a process, the principles of which had already been established, whereby this resin could be marketed in a form which would render its use considerably more economical.

Chemical Trade Inquiries

The following trade inquiries are abstracted from the "Board of Trade Journal." Names and addresses may be obtained from the Department of Overseas Trade (Development and Intelligence), 35 Old Queen Street, London, S.W.1 (quote reference number).

Australia.—A Melbourne firm desires to represent United Kingdom manufacturers of tanning materials, industrial chemicals, dyes, and oils, on either purchasing or consignment basis. (Ref. No. 601.)

Austria.—An agent established at Vienna wishes to obtain the representation (on "own account" basis), of United Kingdom manufacturers of colours, varnishes, paper and cellulose, foodstuffs and beverages. (Ref. No. 609.)

Forthcoming Events

Dec. 4.—Society of Chemical Industry (Yorkshire Section) and Institute of Chemistry (Leeds Area Section). Jubilee Memorial Lecture. "Biochemistry and the Manufacture of Fine Chemicals." Dr. F. H. Carr. 7.30 p.m. University, Leeds.

Dec. 4.—Society of Chemical Industry (London Section). "The Control and Measurement of Temperature in an Industrial Laboratory." E. A. Cooke and J. C. Swallow. 8 p.m. Burlington House, London.

Dec. 4.—Institute of the Plastics Industry (London Section). "Common Sense Costing." S. A. Goode.

Dec. 6.—Institution of the Rubber Industry (West of England Section). "The Causes of Tyre Failure." Dr. J. G. Mackay. Town Hall, Trowbridge.

Dec. 6.—Manchester Metallurgical Society. "Rule of Thumb Science in Steel Making." H. Brearley. 7 p.m. College of Technology, Manchester.

Dec. 6.—Society of Public Analysts. 8 p.m. Burlington House, London.

Dec. 6.—British Association of Chemists (Liverpool Section). Supper. Angel Hotel, Liverpool.

Dec. 7.—Society of Dyers and Colourists (West Riding Section). "Mildew." R. Burgess.

Dec. 7.—Institution of the Rubber Industry (Midland Section). "Tyre Curing Bag Problems." J. Mattinson. Victoria Hotel, Wolverhampton.

Dec. 7.—Institute of Metals (London Section). Joint meeting with the Institute of British Foundrymen. "A Metallurgist's Outlook on Modern Foundry Productions." J. R. Handforth. 7.30 p.m. 83 Pall Mall, London.

Dec. 7.—Institute of Metals (Birmingham Section). "The New Copper Refinery at Prescot." D. W. Aldridge. James Watt Memorial Institute, Birmingham.

Dec. 7.—Institute of Brewing (North-Eastern Section). "The Effect of Soil Reaction on Plant Growth." Professor N. M. Comber. 7 p.m. Queen's Hotel, Leeds.

Dec. 7.—The Chemical Society. Ordinary Scientific Meeting. 8 p.m. Burlington House, London.

Dec. 7.—Society of Chemical Industry (Bristol Section) and Chemical Engineering Group. "British Chemical Stoneware." G. N. Hodson. 6.45 p.m. University, Bristol.

Dec. 8.—Society of Chemical Industry (South Wales Section). "Notes on the Extraction and Refining of Paraffin Wax." E. Thornton. 7 p.m. Thomas' Café, High Street, Swansea.

Dec. 8.—Society of Chemical Industry and Institute of Chemistry (Edinburgh and East of Scotland Section). "Serological Methods in the Detection of Crime." Professor John Glaister. 7.30 p.m. 36 York Place, Edinburgh.

Dec. 8.—Oil and Colour Chemists' Association (Manchester Section). "Regulations Relative to Paint." Dr. J. J. Fox. Manchester.

Dec. 8.—Institute of Metals (Sheffield Section). "Modern Application of Electric Heat." J. C. Howard. 7.30 p.m. University, Sheffield.

Dec. 8 and 9.—Borough Polytechnic. Exhibition of Students' Work. 6-9 p.m. (Friday). 2.30 to 9.30 p.m. (Saturday). Borough Road, London, S.E.1.

Dec. 8.—The Chemical Society. Ramsay Chemical Dinner. 6.45 p.m. Central Hotel, Glasgow.

Dec. 8.—The Institute of the Plastics Industry (Midlands Section). "Salesmanship." W. G. W. Payne. 7.30 p.m. Imperial Hotel, Birmingham.

Dec. 8.—Society of Chemical Industry (Liverpool Section). "The Mechanisation of Research." Major F. A. Freeth. 6 p.m. University, Liverpool.

Dec. 8.—West Cumberland Society of Chemists and Engineers. "Some Notes on Internal Combustion Engines. L. Wyld. 7 p.m. Workington.

Dec. 8.—Institution of Chemical Engineers. "The Corrosion and Protection of Magnesium and its Light Alloys." Guy D. Bengough, and L. Whitby. Burlington House, London.

New Companies Registered

Parkin-Shelley, Ltd. Registered November 2. Nominal capital £1,000 in £1 shares. Research chemists, retail and wholesale chemists, etc. Directors: Walter H. Parkin, 51 Bristol Road, Edgbaston, Birmingham, and Ronald C. Shelley.

Oil and General Products, Ltd., 48 Muntz Street, Small Heath, Birmingham. Registered November 6. Nominal capital £1,000 in £1 shares. Manufacturers, refiners, blenders and importers of and dealers in oils and oleaginous compounds and emulsions, etc. Directors: John W. H. Else and William Hand.

International Oil Corporation, Ltd., 64 Cross Street, Manchester. Registered November 20. Nominal capital £5,000. To adopt an agreement with John Reid, and to carry on the business of manufacturers, producers, distillers and importers of and dealers in oils, lubricants, greases, tallow, petrol, motor spirits, oil fuels and fuel both liquid and solid, etc.

Fishbrook Dyeing Co., Ltd. Registered November 14. Nominal capital £13,000. To acquire the business of a dyer, carried on by G. Chadwick at Fishbrook Works, Kearsley, Lancs, and to carry on the business of manufacturers, bleachers and dyers of cotton, woollen, silk, artificial silk, etc. Directors: George Chadwick, The Palace Hotel, Buxton, Derbyshire, and Arthur Chadwick.

Broue and Co., Ltd. Registered November 18. Nominal capital £50,000. To commercialise, develop and turn to account the inventions of A. E. Broue in connection with the treatment of titaniferrous sands or ores. Manufacturers of fertilisers, cements, refractories and any other commodities in which titaniferrous ores, sands or any other compounds may be used, etc. Directors: Albert Edward Broue, and Loretta Mary Broue, 60 Jermyn Street, S.W.1.

Company News

Lautaro Nitrate Co., Ltd.—The ordinary general meeting of the company will be held at Calle Serrano 546 Valparaiso, Chile, on December 29, at 3.30 p.m.

J. C. and J. Field.—The half-yearly payment on the 7 per cent. preference shares, less tax, in respect of the six months to September 30, 1933, is payable on December 11.

Langdale's Chemical Manure Co.—For the year ended September 30 last a profit of £53 is reported, against £990 in the previous year. There is a debit of £235 to be carried forward.

Anglo-Persian Oil Co.—It is announced that the board has decided not to declare an ordinary interim dividend in respect of 1933, but to defer consideration of a dividend until the accounts for the year become available.

Anglo-Continental Guano Works.—A net profit of £61,489 is reported for the year to June 30, 1933, against £46,178 in 1931-32. One year's preference dividend to December 31 last was paid in July, and the directors now propose to pay, on December 31, the arrears to June 30, 1933, and to meet the due December distribution. As in the previous year, £5,000 is placed to depreciation reserve, and the carry-forward is then £35,538, against £36,928 brought in.

International Nickel Co. of Canada.—The quarterly report to September 30 last states that the net operating income totalled $4,829,924, against $2,941,092 in the June quarter. The net profit of $3,773,130, after tax, interest, depreciation, etc., is equivalent to 22½ cents a share on the common stock after allowing for the preferred dividend payment of $483,475. The figure compares with a net profit of $1,943,046 in the June quarter, equivalent to ten cents a share on the common stock. To date, the 1933 profits of $5,636,019 is equivalent to 28½ cents per common share, and compares with a loss of $292,352 in the corresponding period of 1932.

Timothy Whites (1928).—The net profit for the year to September 30, 1933, is shown at £201,504, against £186,263 in 1931-32. Depreciation takes £18,925, tax £45,641, and preferred dividends £94,275, and the directors recommend a final payment of 10 per cent. on the deferred ordinaries, making 15 per cent., less tax, against 10 per cent. in the previous year. The carry-forward is £20,269, against £14,034 brought in. The annual meeting will be held at the Hotel Victoria, Northumberland Avenue, London, on December 15, at 12 noon. An extraordinary meeting will be held on the same day, when shareholders will be asked to pass a resolution altering the name of the company by removing "(1928)" from its title.

Meldrums Ltd., Timperley, have received an order to fit their patent sprinkler stokers to seven boilers at the Prestwich Mental Hospital. There is an increasing demand for Meldrums' forced draught furnaces, mechanical stokers and refuse destructors, due to improving trade activity.

From Week to Week

THE ETNA CHEMICAL CO., LTD., 204 Great Portland Street, W.1, has changed its name to Bolsover Chemical Co., Ltd.

THE GOVERNMENT OF THE IRISH FREE STATE is shortly to set up a Scientific Research Board and money for the establishment of the organisation is being sought through the Dail.

WE REGRET TO RECORD THE DEATH of Mr. J. Kershaw, of F. W. Berk and Co., Ltd., which occurred on Wednesday, following an operation.

AN EXHIBITION illustrating the method employed by the Anglo-American Oil Co., Ltd., in producing ersolube motor oil by the hydrogenation process, was opened last week within the Central Station, Glasgow.

MR. L. SINCLAIR, South Wales and West of England sales manager of the Anglo-American Oil Company, Ltd., has been appointed assistant sales manager of the company's southern area at the London headquarters.

ALLEGATIONS MADE ABROAD that the import of nickel into Germany is for armament purposes are said to be false. It is explained that the import of this metal, although larger than last year, is less than in the years 1928-29.

MR. ALEC. O. DICK, who had been for four years a director of the United Steel Companies, Indian Section, and a manager in India prior to his appointment as commercial manager of the Frodingham and Appleby branch of the United Steel Companies, has died at Scunthorpe.

MR. W. SEALS-WOOD, a former chairman of Lever Brothers, in South Africa, has died in Johannesburg. Mr. Seals-Wood, who was well known in commercial circles, was responsible for the organisation of the Johannesburg Publicity Association, and was a member of the council of the South African Economic Society.

THE MAGADI SODA CO., LTD., has given notice that bonds of £100 may be split into two each of £50, and bonds of £500 may be split into such a number of bonds either of £50 or £100 as amount in total to £500 nominal, subject to the applicant bearing the cost of any stamp duty and other charges necessitated by the splitting.

MR. WILLIAM PICKUP (73), of Carlton Lea, Billinge End, Blackburn, Lancashire, mining engineer, chairman and general manager of the Rishton Colliery, Ltd., a member of the Council of the Institute of Mining Engineers, left £21,754 (net personalty £20,143).

THE "CHEMICAL ENGINEERING AND MINING REVIEW," originally known as the "Australian Mining and Engineering Review," has now been in existence for 25 years, and to celebrate this has issued an anniversary number. Of particular interest is a statistical review of the Australian mining industry from the time of the paper's inception. The progress of metallurgy at Broken Hill, N.S.W., over the same period is also dealt with, and a pictorial supplement is included.

DR. GEORGE TATE has died at his residence in Acrefield Road, Prenton. Dr. Tate, a native of Hastings, was the son of Mr. Thomas Tate, a well-known educationalist in the South. He began his education in London, and then went to Germany. From the University of Wurzburg he received the degree of Ph.D., and on his return to England became a Fellow of the Chemical Society. He came to Liverpool about 1881, and took over the School of Chemistry in Duke Street, which had belonged to Dr. Sheridan Muspratt.

PLANT FOR THE PRODUCTION OF SULPHUR at Gaza (Palestine) will be complete by February. The general offices of the company, The Sulphur Quarries, Ltd., are now open there, and the plant is under construction by Fraser and Chalmers, Ltd., of Erith, Kent. Marketing arrangements for the product appear satisfactory, and many inquiries have been received from Egypt and the Levant as well as from Europe. Analysis of the crude fused sulphur produced from ore during the tests carried out by a pilot plant showed a particularly high percentage of purity ranging from 99.75 per cent. to 99.81 per cent.

THE REPORT OF THE COMMITTEE appointed by the Board of Trade to consider the existing Board of Trade "Memorandum on the Carriage of Dangerous Goods in Ships," and to advise what alterations, if any, were desirable to make the rules laid down in the memorandum suitable for international adoption, has now been published (H.M. Stationery Office, price 2s. net.) The appointment of this committee followed on the recommendation of the International Conference on the Safety of Life at Sea, 1929, that every possible effort should be made to obtain international agreement as to what goods should be considered as "dangerous goods" and to fix uniform rules for the packing and stowing of such goods on passenger ships. Attached to the report is an appendix which contains a full statement of the precautions which should be taken in the packing and stowage of dangerous goods and explosives.

BRIG.-GEN. SIR WILLIAM ALEXANDER, M.P., has accepted the presidency of the National Union of Manufacturers for the second year in succession.

THE NAME of the Brittol Manufacturing Co., Ltd., manufacturing chemists, 20 Cannon Street, Manchester, has been changed to Frajon, Ltd.

MR. JOHN WATSON WILSON (47), of Nethercote, Stamford Road, Alderley Edge, Cheshire, and the Yorkshire Dyeing and Proofing Company, Middleton, left £2,330 (net personalty £2,089).

WE REGRET TO RECORD THE DEATH, on November 16, of Mr. Ernest E. Bartlett, who was for many years a director of James Walker and Co., Ltd., Woking.

MR. JAMES TENNANT, J.P. (82), of Fairlieburne, Fairlie, Ayrshire, a director of the United Alkali Co., Ltd., left £75,404, (personal estate in Great Britain).

THE BROKEN HILL PROPRIETARY CO., LTD., announces that Mr. Leonard Darling has been elected a member of the London board.

MR. D. W. ADAMSON, B.Sc. Tech. (Manchester), and Mr. George Baddeley, M.Sc., Ph.D. (Sheffield), have been appointed demonstrators in applied chemistry in the Faculty of Technology, Manchester University.

MR. E. G. EVANS, of 3 London Wall Buildings, E.C.2, was appointed receiver and manager of Aluminium and Chromium Coatings, Ltd., on November 9, under powers contained in debenture dated July 20, 1933.

MR. FREDERICK GEORGE MAGUIRE, late of Glenbank, Bangor, Co. Down, left personal estate in Great Britain and Northern Ireland of £77,925, of which £46,922 is in Great Britain. Mr. Maguire, who died on July 31 last, was a director of Vulcanite, Ltd., and of Davidson and Co., Ltd.

THE REORGANISATION OF THE GERMAN STEEL TRUST was approved at an extraordinary general meeting of the United Steel Works in Essen on November 29. It was also approved by other concerns included in the Trust. Producing and holding firms are to be separated, and the holding company which will be the absolute owner of the entire works will be the Gelsenkirchen Mining Works Co. The total nominal capital will be reduced by about £35,000,000 (at par) to just on £27,000,000.

THE CHEMICAL WORKERS' UNION has announced that the Executive Council has considered a request from members of the union employed at the Government Poison Gas Research Station, calling upon the union to make representations to the War Department for improvement in the matter of status, wages, sick pay, and holidays. The executive has been requested to secure an agreement embodying maximum rates as follows:—Labourers 50s., process workers 60s., laboratory assistants £200 per annum, rising £25 per year to a maximum of £300.

THE SECOND OF A SERIES of standard specifications for insulating varnish has just been issued by the British Standards Institution. This deals with baking varnish of the bitumen type, which gives a finished film which is flexible, moisture-resisting and capable of withstanding vibration without chipping or cracking. The varnish covered by the specification is suitable for the impregnation of coils, including those of electric traction plant, and for use in any situation where apparatus is subjected to vibration. The specification is based on the results of considerable investigations made by the British Electrical and Allied Industries Research Association, and is drafted in the usual form of clauses defining the performance limits, followed by appendices describing in detail the methods of testing to be employed. Copies of this new British Standard (No. 514-1933) may be obtained from the British Standards Institution, 28 Victoria Street, London, S.W.1 (2s. 2d. post free).

BRIG.-GEN. SIR WILLIAM ALEXANDER, M.P., in his presidential address at the annual meeting of the National Union of Manufacturers, on November 28, said there was reason to think that the Government was being influenced by political pressure to place restrictions on the growing road transport industries for the purpose of helping the declining traffic of the railways. Sir William, who is a director of British Celanese, Ltd., Canadian Celanese, Ltd., Celanese Corporation of America, and other companies, suggested that to relieve the Government from such handicaps, there should be established a Trade and Industry Advisory Committee of experienced and proved ability, free from any political atmosphere, on the lines of the Import Duties Advisory Committee. Such a body, he said, would give the country the confidence and fair dealing which it could never have from Government administration and judgment. Sir William added that the Union had asked the Government that officials should be sent to Canada to watch the use being made of the Canadian corridor by American exporting companies. He had heard privately that two Customs accountants were now in Canada making investigations.

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ITALY.—Gentleman established in Milan, wishing to extend his business of commission agent, would represent a firm, on a commission basis, doing export in chemicals to this country. Bank guarantees can be supplied. Write, Box No. 1538, THE CHEMICAL AGE, 154 Fleet Street, London, E.C.4.

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GAS-HEATED Drying Machine with brass internal fittings and revolving agitator. Box No. 1534, THE CHEMICAL AGE, 154 Fleet Street, London, E.C.4.